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MID-TERM EVALUATION OF THE
GUINEA NATURAL RESOURCES
MANAGEMENT PROJECT

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ACRONYMS

AGRIDEC	Agricultural Development Consultants, Inc.
AMIP	Agricultural Marketing Investment Project
AVHRR	Advanced Very High Resolution Radiometer
CED	Community Enterprise Development
CEEL	Centre de Formation pour l'Elevage [Livestock Training Center]
CENAFOD	Centre Africain de Formation pour le Développement [African Training Center for Development]
CESAO	Centre d'Etudes Socio-économiques en Afrique de l'Ouest [Center of Socio-Economic Studies in West Africa]
COP	Chief of Party
CPSP	Country Program Strategic Plan
CRD	Communautés Rurales de Développement [Rural Development Committees]
DAI	Development Alternatives, Inc.
DNFC	Direction Nationale des Forêts et de la Chasse [National Directorate of Forests and Hunting, renamed DNFF]
DNFF	Direction Nationale des Forêts et de la Faune [National Directorate of Forests and Wildlife]
EC	European Community
FAO	Food and Agriculture Organisation of the United Nations
FDHRIDS	Fouta Djallon Highlands Restoration and Integrated Development Service
GERF	Gestion des Espaces Rurales et Forêts [Management of Rural Spaces and Forests]
GF	Guinean franc
GOG	Government of Guinea
GNRMP	Guinea Natural Resources Management Project
GRAPP	Groupe Recherche d'Appui et de l'Auto-promotion Paysanne [Research Group on Rural Self-Help and Self-Development]
HRDA	Human Resources Development Assistance Project
ICRAF	International Center for Research on Agroforestry
IIED	International Institute for Environment and Development
IMFDW	Integrated Management of the Fouta Djallon Watershed
LTC	Land Tenure Center
LTTA	Long-term Technical Assistance
MAEF	Ministère de l'Agriculture, l'Elevage et des Forêts [Ministry of Agriculture, Livestock and Forests]
MARA	Ministère de l'Agriculture et des Ressources Animales [Ministry of Agriculture and Animal Resources, replaced by MAEF]
MARP	Méthode Accélérée de la Recherche Participative [Rapid Rural Appraisal]
M&E	Monitoring and Evaluation
NGO	Non-governmental organization
NRM	Natural resource management
OAU	Organisation of African Unity
OVI	Objectively verifiable indicator
PACD	Project Assistance Completion Date

ACRONYMS (continued)

PCV	Peace Corps Volunteer
PID	Project Identification Document
PIL	Project Implementation Letter
PL-480	Public Law 480
PMU	Project Management Unit
PP	Project Paper
PAME	Participatory Assessment, Monitoring and Evaluation
PRA	Participatory Rural Appraisal
REDSO	Regional Economic Development Services Office, USAID
RRA	Rapid Rural Appraisal
SNAPE	Société Nationale pour l'Amenagement des Points d'Eau [National Society for the Management of Water Points]
STTA	Short-term Technical Assistance
TM	Thematic mapping
TR&D	Tropical Research and Development
UGVD	Union Guinéenne des Volontaires pour le Développement [Guinean Union of Volunteers for Development]
UNDP	United Nations Development Programme
UNSO	United Nations Sudano-Sahelian Organisation
USAID	United States Agency for International Development
VITA	Volunteers in Technical Assistance
WMU	Watershed Management Unit
WRI	World Resources Institute

Exchange rate: Approximately 1000 GF (Guinean francs) = US dollar \$ 1.00 (May 1995)

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Consultants, the Agricultural Research Institute at Bareng, PRIDE, Crédit Mutuel, Union Guinean des Volontaires pour le Développement, the FIDA Project, the Upper Gambia Project, FAO, and others. In the watersheds, time was about equally divided between field visits of project activities and discussions with village women and men, and meetings with the Watershed Management Unit (WMU) staff, village management committees, local officials (*sous-prefet*, CRD), local elders (*conseils de sage*, *imams*) and Peace Corps Volunteers. The team split up as needed, but always discussed their findings concerning each pilot watershed. The team also read and consulted a wide variety of documentation and reports on the project and related topics.

After returning to Conakry, the Team had four days to discuss and reach a consensus on key findings and to prepare 15- and 6-page summary documents in English and French. These were distributed by USAID on May 5 to USAID, Chemonics, DNFF/WMU directors, Peace Corps, Land Tenure Center and Management Consultants staff for their review prior to a three-hour briefing and discussion (conducted in French) held at USAID on May 8. All the organizations invited were represented. This workshop was followed on May 8 by a 2-1/2 hour review with the acting USAID Mission Director and key USAID staff. Dorsey and Tabor left Guinea on May 8 after submitting draft reports. Williams and Hagen worked in Guinea through 13 May, and then in the U.S. (exchanging text by electronic mail) through May 25 to complete a full draft. The report was finalized in July 1995, after receipt of review comments from the USAID Mission.

Findings and Conclusions

The project has made moderate progress towards achieving the project purpose of improving the management of natural resources in three target watersheds in the Fouta Djallon Highlands for profitable and sustainable agricultural production. The project is clearly appreciated by the majority of watershed residents, especially for assistance in spring capping, improved well construction and for school construction. Dry-season market gardening in Diaforé is having a notable, positive socioeconomic impact, putting a near-end to dry-season emigration in some villages and creating a new economic opportunity for watershed residents, especially women. The project has received numerous demands to extend the project beyond the Diaforé Watershed.

Progress has been hampered by a lack of agronomic expertise, by a lack of focus on soil fertility improvement and maintenance and by overly emphasizing low-input, organic gardening techniques that are insufficient to address the effects of long-term phosphate depletion of agricultural soils. Lack of progress towards project purpose can also be traced to the project's logical framework itself. Achievement of all the inputs and outputs would not necessarily lead to achievement of project purpose. Most inputs and outputs are not focussed on improving the profitability and the sustainability of agriculture. Rather they are primarily concerned with improving natural resources management in general, but not natural resources management for improving agriculture *per se*. Finally, none of the three watersheds are in high agricultural potential zones. Physical road access and distance to market from two of the watersheds pose major constraints to the development of profitable, market-oriented agriculture.

EXECUTIVE SUMMARY

Project Purpose

The purpose of the Guinea Natural Resources Management Project as stated in the project paper is "to improve the management of natural resources in three target watersheds in the Fouta Djallon High-lands for profitable and sustainable agricultural production." The project forms part of a multi-donor program to improve management of the Fouta Djallon watershed. The project works in three geographically dispersed watersheds (Diaforé, Koundou, and Dissa), with a project management unit based in Labé. Project activities are structured in terms of six components: Natural Resource Conservation, Enterprise Development, Training, Applied Research, Policy Studies, and Impact Monitoring and Evaluation.

The GNRMP originally had a budget of US\$ 16.5 million for a six-year period (1991-97), which has subsequently been increased to US\$ 17.9 million. The project is being implemented by the National Directorate of Forestry and Wildlife (DNFF), with technical assistance from Chemonics International, with a sub-contract to Tropical Research and Development (TR&D). Assistance in project implementation is also provided by the U.S. Peace Corps. Policy research is being undertaken by the Land Tenure Center.

Purpose of the Mid-Term Evaluation

The overall purpose of this external, mid-term evaluation is to review the progress to date in project implementation and to make recommendations for improvements to the project in the time remaining through the end of the project (PACD). The evaluation focused on: (1) progress to date in achieving the project's outputs and purposes; (2) the appropriateness and effectiveness of the interventions undertaken by the project; (3) the validity of the project assumptions; (4) the provision and quality of project inputs; (5) the role of the GOG in the implementation of the project; (6) the management role of USAID/Guinea in achieving the project goal and purpose; (7) the sustainability of the project; and (8) modification, if necessary, in the goals, purposes, outputs and inputs of the project.

The Evaluation Methodology

The evaluation was conducted in Guinea between 13 April and 13 May 1995. The evaluation team consisted of environmental specialist and team leader, Roy Hagen; social scientist, Dr. Paula Williams; agroforester, Joseph Tabor; and agricultural economist, Dr. Joseph Dorsey.

The evaluation team held meetings with USAID, DNFF, Peace Corps and other institutions in Conakry, prior to leaving for the field. April 18 to April 30 was dedicated to travel and field visits to the Project Management Unit in Labé and to the Diaforé, Koundou and Dissa Watersheds. Other organizations in the Fouta, located in Labé, Bareng, and Mamou, were also contacted, such as Land Tenure Center, Management

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Moderate progress has been made in developing participatory village management capacity. The Government of Guinea (GOG) will almost certainly not be able to sustain project activities beyond PACD. The development of village-level capacity for problem analysis and planning and for managing their resources is therefore critical. The project has involved communities in problem identification and prioritization, and has developed village management committees for managing capped springs and tree plantations around springs. This work could form an excellent basis for developing a truly participatory approach to develop village-level capacity for planning, implementation and evaluation in the remaining life of the project.

Small-enterprise development has shown fairly good progress overall, with very promising market garden development in Diaforé Watershed. Watershed Management Unit (WMU) enterprise staff are sociologists and women extension agents with no prior training in enterprise development. Enterprise development has been constrained by insufficient access to appropriate credit, by lack of agronomic expertise and of appropriate technical packages for market gardening, by USAID resistance to the use of chemical fertilizers and other similar inputs and by the lack of literacy and numeracy amongst villagers. Private nursery development looks promising for fruit tree seedling production. Some women's enterprises, like soap making, seem to offer only a marginal financial return.

Most agriculture consists of permanent *tapade* home gardens and slash-and-burn exterior fields. The project is making modest contributions to improving the sustainability of *tapades* through soil conservation and composting, but the overall impact on the profitability and productivity has probably been negligible. The project has had almost no impact on the sustainability and profitability of the slash-and-burn exterior fields. Many of these fields could never be made sustainable over the long term. The soil fertility and productivity of the exterior fields are almost certainly continuing to decline. The problem of the depletion of soil phosphate reserves has not been addressed.

It is very difficult to judge the degree of adoption of soil conservation and agroforestry techniques. Significant numbers of men and women farmers are participating in these activities. Live fencing techniques should eventually diminish labor and wood demands for fencing. Agroforestry trials have not been targeted as strongly on soil fertility management as they might have been. Considerable resources have gone into tree planting around springs, but the overall impact on water recharge is negligible. Very little has yet been done in fire, range and watershed management.

Land tenure is the one policy area that has been addressed in a significant fashion. The Land Tenure Center studies have been well done and have served for the development of innovative contracts for the landless, particularly women, to gain access to land. Study results have not been fully exploited by the project. Applied research done under contract with national centers has been severely hindered by the periodic unavailability of PL-480 funds managed by the GOG. Long-term training in US universities is progressing well. Short-term training of Guinean staff has been satisfactory, but with room for improvement.

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The GNRMP has only a partially-developed M&E system that is not tied closely to the logical framework, its objectives are not clear, its sampling methodology is largely undefined and little indication is given as to how it will be used. Many indicators are highly unrealistic. A baseline survey has recently been done and is probably unusable.

Peace Corps volunteers have not been well integrated into the project in the past, but this seems to be improving. The roles of both Peace Corps volunteers and women extension agents need further clarification. The qualifications, motivation and performance of GOG civil servants and contractual staff is variable. They have no scopes of work and no performance-based incentive system.

Principal Recommendations

The project goal should be restated as, "The goal of the GNRMP is to establish sustainable production systems in the Fouta Djallon Highlands that will conserve the natural resource base of the watersheds of the Fouta Djallon." The purpose should be restated as, "The purpose of the project is to develop pilot sustainable production systems in the Diaforé, Koundou and Dissa Watersheds for future extension and adaption to adjoining areas." Whether or not goal and purpose are changed, the logical framework needs to be amended for internal consistency.

A professionally-facilitated team-building workshop is recommended for reviewing project goal, purpose and outputs and strategies and the roles of all project partners. There should be greater emphasis on strategic analysis, planning and periodic evaluation to assure that all project components are contributing toward project purpose. Work is needed to improve the existing monitoring and evaluation system.

A much greater effort should be made to increase the capacity of communities for plan and manage their own resources. Two villages in each watershed should be targeted for a concerted effort to develop village-based natural resource management plans. More participatory extension techniques should be employed by all project staff. The women's extension advisor should assume broadened responsibilities as Chief Extension Advisor for the overall project. An expanded role should be sought for local NGOs.

Agriculture should be intensified on the best soils with gentle slopes. Economic alternatives must be sought for farmers practicing annual cropping on steep or marginal sites where annual crops cannot be sustained. Enterprise development is strategically important to the environmental sustainability of agriculture. Agricultural enterprise development should focus on expansion of market crops. Much greater agronomic expertise is needed including an LTTA agronomist. Full agronomic packages should be developed including use of chemical fertilizers for maintaining the nutrient balance of soils. Access to credit needs to be improved, and the project should absorb part of the risk of starting new, unproved enterprises in the watersheds. Applied research should focus on market crops and soil-fertility improvements.

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Agroforestry, soil and water conservation and agronomy should be more closely integrated, should focus more strongly on soil-fertility maintenance, and should make greater use of perennial herbaceous species for soil conservation and fertility management. Natural resources management should be expanded to cover range and fire management and management of water recharge areas for springs and wells.

The DNFF should develop scopes of work for all watershed employees. These should serve for training needs assessments, training plans and the development of a performance-based incentive system. National-level policy studies should be restricted to land tenure issues with continued support to the Land Tenure Center.

Lessons Learned

The GOG lacks the capacity to carry on project activities beyond PACD. Therefore, much greater emphasis must be placed on participatory approaches for developing the local capacities of communities to manage their own resources. This approach will require engaging village women and men in assessment, planning, implementation and evaluation of management interventions.

A pilot project should concentrate on the development of innovative, sustainable, replicable systems and should not be overly concerned with impacts achieved during the life of the project. In the design of a pilot project like the GNRMP, one should not program the use of local counterpart (PL-480) funds for strategically important activities.

The development of sustainable and profitable agricultural and natural resource management systems requires a concerted, continuing and participatory process of strategic analysis, planning, monitoring and periodic evaluation of project strategies and interventions.

Actions Required by USAID

USAID should review the Evaluation Team's recommendation that project goal and purpose be amended and that the logical framework be reviewed/amended for internal consistency.

USAID must address the Evaluation Team's recommendation that the soil and water conservation LTTA position be converted to an agronomist LTTA, and that other LTTA SOWs be amended as suggested.

1. INTRODUCTION

1.1 Project Background

The Guinea Natural Resources Management Project (GNRMP) was designed by USAID as part of an Organization of African Unity (OAU) lead, multi-donor, Fouta Djallon Integrated Management Project (IMFDW). The IMFDW grew out of regional concerns over the degradation of the upper watersheds of three of West Africa's most important rivers. Baseline studies of the watersheds of the Fouta Djallon were conducted between 1984 and 1987. This led to a plan to design and implement pilot projects in 12 watersheds of the Fouta to test a variety of approaches and interventions. The results would then be used to develop a third, fully operational program to extend the successful approaches to the rest of the Fouta Djallon.

In 1987, the Government of Guinea (GOG) requested donor support for the design and implementation of the pilot projects to cover the 12 watersheds selected. USAID designed the GNRMP during the period 1988-1991 and signed the Project Grant Agreement with the GOG in 1991. The GNRMP was designed as a six-year project (1991-97) to cover the three pilot watersheds of Diaforé, Koundou and Dissa with a budget of US \$ 16.477 million. The budget has subsequently been increased to \$17.9 million.

USAID launched a request for proposals, which culminated in the signing of a US\$ 7.7 million contract in July 1992 with Chemonics International for the provision of technical assistance and other services. Chemonics and TR&D fielded their team of four long-term technical assistants (LTTA) in September and October 1992. By this time, the GOG had assigned or recruited most of the technical staff for the three pilot watersheds, and begun construction. The project was operational by late 1992. Therefore, this evaluation is taking place after just over two and one-half years of implementation.

The project goal, as stated in the Project Paper (PP), is "to increase sustainable agricultural and value-added production by men and women for domestic and export markets." The project's purpose is "to improve the management of natural resources for profitable and sustainable agricultural production in three watersheds of the Fouta Djallon Highlands."

The project is implemented by the Directorate of Forests and Wildlife (Direction National des Forêts et de la Faune, DNFF) of the Ministry of Agriculture, Livestock and Forests (MAEF) of the GOG. Technical assistance is provided through a contract with Chemonics International and a sub-contract with Tropical Research and Development, and by the Peace Corps. Through a mission buy in into a centrally-funded USAID project, USAID awarded a separate grant using project funds to The Land Tenure Center to conduct land tenure studies for the project.

According to the original project document, USAID was to provide directly US \$10.4 million (63 percent), plus an additional US\$ 5.288 million (31.7 percent) in local

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counterpart (PL-480) funds. The direct contribution of the Guinean government amounts to US \$0.555 million (3.4 percent), and that of Peace Corps is US\$ 0.233 million (1.4 percent). The largest component of the USAID funds is going to technical assistance (US\$ 4.756 million) and commodities (US\$ 2.702 million). Of the PL-480 funds, over two-thirds (US\$ 3.761 million) are going to recurrent costs and salaries for the watershed activities. Of the USAID funds, a large portion has been provided to the technical assistance contractor, for provisions of technical assistance, commodities, and training. Of the total budget, only 8.3 percent was allocated to training activities (US\$ 0.687 million) and for watershed technology transfer and demonstration (US\$ 0.674 million).

As the project budget has been increased, USAID's direct share is now US \$11.8 million. The original allocation for policy studies, of US \$0.5 million, has been increased to US \$1.3 million.

1.2 Purpose of the Mid-Term Evaluation

The overall purpose of this external, mid-term evaluation is to review the progress to date in the implementation of the project and to make recommendations for improvements to the project in the time remaining through the end of the project (PACD). The Scope of Work for the evaluation focuses on the following: (1) progress to date in achieving the project's outputs and purposes; (2) the appropriateness and effectiveness of the interventions undertaken by the project; (3) the validity of the project assumptions; (4) the provision and quality of project inputs; (5) the role of the GOG in the implementation of the project; (6) the management role of USAID/Guinea in achieving the project goal and purpose; (7) the sustainability of the project; and (8) the modification, if necessary, in the goals, purposes, outputs and inputs of the project. The evaluation focuses on examining the project's field activities in the three watersheds. The Scope of Work for the evaluation is provided in Appendix 1.

1.3 The Evaluation Team

The evaluation team was fielded under an Indefinite Quantity Contract (IQC) with Agricultural Development Consultants (AGRIDEC), Inc. of Miami, Florida. Development Alternatives, Inc. (DAI) served as a sub-contractor for the evaluation, providing the services of one team member. The four members of the team are as follows:

The Environmental Specialist and Team Leader, Roy Hagen, is a senior natural resources professional with over 18 years experience in Africa, mostly in francophone countries. Mr. Hagen has a very broad background in the linkages between natural resources management and development and environmental issues. He recently served as chief-of-party on the USAID-funded Sustainable Approaches to Viable Environmental Management (SAVEM) protected area project in Madagascar.

The Social Scientist on the team, Dr. Paula Williams, is an applied social scientist who has worked on natural resource and forestry development issues in Africa for over 11

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years. Dr. Williams participated in the pre-feasibility study for the GNRMP in 1988 and on a technical assistance team providing input to the initial project design activities in 1990. She thus was able to provide an invaluable historical perspective to the evaluation team.

The team's **Agroforester**, Joseph Tabor, has over 11 years experience in agroforestry, soil and water conservation and related natural resource management fields in Africa, Haiti and the Near East. Mr. Tabor has done innovative work on building upon traditional soil and land use classification systems for improved natural resources management.

The **Agricultural Economist** on the team, Dr. Joseph Dorsey, is a senior-level enterprise development specialist with broad experience in Latin America and Africa. He has particular expertise in the credit and marketing aspects of rural enterprise development.

1.4 The Evaluation Methodology

The evaluation was conducted in Guinea between April 13 and May 13. Between April 14 and 18, meetings were held with USAID, DNFF and Peace Corps/Conakry, a work plan was prepared and an initial table of contents for the report was drafted. The team members became familiar with each others' backgrounds, and shared their initial views on their perceptions of the key issues concerning this project. Principal responsibility for each section of the report was assigned to each team member.

April 18 to April 30 was dedicated to travel and field visits to the Project Management Unit in Labé and to the Diaforé, Koundou and Disa Watersheds. At least two full working days were spent in each watershed. This time was about equally divided between field visits of project activities and discussions with village women and men, and meetings with the Watershed Management Unit (WMU) staff, village management committees, local officials (*sous-prefet*, CRD), local elders (*conseil de sages, imams*) and Peace Corps Volunteers. The team would split up as needed, but always shared and discussed their findings and impressions of each pilot watershed.

While in the field and in Conakry, the evaluation team also met with representatives of other projects, organizations, and businesses. These meetings included discussions with Land Tenure Center, Management Consultants, the Agricultural Research Institute at Bareng, PRIDE, Crédit Mutuel, Union Guinean des Volontaires pour le Développement, the FIDA Project, the Upper Gambia Project, FAO, and others. The team also read and consulted a wide variety of documentation and reports on the project and related topics.

The team was accompanied on its field trip by an observer from the Rural Development Office of USAID. One or two members of the Chemonics technical assistance team accompanied the evaluation team to each watershed. The National Coordinator for the DNFF joined the Team at Disa. The Evaluation Team did arrange, however, to hold meetings with the WMU staff, the Chemonics staff and the Peace Corps Volunteers (PCVs) individually without any other parties present. At Diaforé, the Evaluation Team

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met with the WMU staff as a group. At Koundou and Dissa, the Team met with the WMU staff members, both as a group and as individuals.

After returning to Conakry, the Team had just over four days to discuss and reach a consensus on key findings and to prepare summary documents for distribution. A 15-page summary of key finding and recommendations was prepared in English and a six-page summary was written in French. These documents were distributed by USAID on May 5 to USAID, Chemonics, DNFF/WMU directors, Peace Corps, Land Tenure Center and Management Consultants staff.

A three-hour briefing and discussion (conducted in French) was held at USAID on May 8. It was attended by representatives of all the organizations listed above. This workshop was followed on May 8 by a 2-1/2 hour review with the acting USAID Mission Director and key USAID staff.

Dorsey and Tabor left Guinea the evening of May 8 after submitting the drafts of their sections. Williams and Hagen worked on compilation of the full draft report before their departure. Williams departed on May 12 and Hagen on May 13. Williams and Hagen subsequently completed editing the draft report in the United States on May 25. The report was finalized in July 1995, after receipt of review comments from the USAID Mission in Guinea.

2. EVALUATION OF THE PROJECT DESIGN

2.1 Logical Framework

The Evaluation Team was asked to reassess the validity of the project's goal and purpose and the validity of the project assumptions. The Team was also asked to recommend modifications as appropriate. The Evaluation Team feels that it is always appropriate to reassess the original design of a project during a mid-term evaluation as program and project designs are rarely perfect, and conditions change over time.

The Team focussed its evaluation of the project's design on the following questions:

- Are the goal and purpose as presented in the logical framework appropriate, clearly stated and in conformity with GOG and USAID strategies?
- Is the project's logical framework internally consistent, i.e. will inputs lead to outputs lead to the achievement of purpose lead to achievement of project goal?
- Are the explicit assumptions of the logical framework clearly stated and are they valid?

2.1.1 Goal and purpose

The Evaluation Team encountered considerable confusion between the perceived goal of the GNRMP and the explicit, written goal. The project's name, Guinea Natural Resource Management Project, indicates strongly that this is a natural resources management project, and that the goal and/or purpose of the project should concern the sustainable management of natural resources. The Project Paper (PP) states that the GNRMP is an "integral part" of the overall program for the 12 pilot watersheds.

The stated goal and purpose, however, does not support this interpretation. The goal and purpose indicate that the GNRMP should be an agricultural productivity project. The goal is stated in the PP as follows:

"to increase sustainable agricultural and value-added production by men and women for domestic and export markets."

This goal is certainly consistent with USAID/Guinea's development strategy. The 1992-1996 Country Program Strategic Plan (dated September 1991) lists the first strategic objective as the "growth and efficiency in agricultural markets." The fact that the GNRMP design and the CPSP were both under preparation in 1991 leads one to wonder if the GNRMP goal was modified at a late stage in the design process to better fit the new CPSP.

The Government of Guinea, however, views the project as a natural resource management project. The December 1987 official request to USAID from the GOG Ministry of

Planning and International Cooperation (Annex D of PP) clearly places the GNRMP in the framework of the Integrated Management of the Fouta Djallon Project. The letter begins with their concerns over the conservation of the natural resources of the Fouta.

Nearly all of the current actors in the project express their belief that increased agricultural production and small enterprise development (value-added production) are not the PP goal, but rather are strategies for achieving the higher goal of protecting the Fouta Djallon watersheds. Indeed, after visiting the three pilot watersheds, the Evaluation Team believes that if increasing agricultural production was the main goal, then the project designers would never have chosen these remote watersheds of very low agricultural potential, especially the Diaforé and Koundou watersheds.

Indeed, the PP states that the GNRMP is an integral part of the Fouta Djallon Highlands Integrated Rural Development (FDHIRD) Project. The PP goes on to state, "the objective of FDHIRD is to ensure the rational use and protection of the Fouta Djallon Highlands' natural resources and to improve the living conditions of its people as well as the people living in Guinea's neighboring countries irrigated by the rivers which originate from the highlands."

The project purpose as stated in the PP is "to improve the management of natural resources for profitable and sustainable agricultural production in the three watersheds of the Fouta Djallon Highlands." This purpose is consistent with the stated goal of increasing agricultural production, but is not directly linked to the goal of increasing "value-added production."

The purpose makes it clear that improved natural resources management is considered as the means for increasing agricultural production. The purpose also implies that the project should only be concerned with the management of those natural resources that will lead to increased agricultural production. Thus, for example, natural forest management would not be an appropriate activity or output.

2.1.2 Internal Consistency of the Logical Framework

The Evaluation Team next looked at the internal consistency of the logical framework at its lower levels. The logical framework is built up from inputs to outputs to purpose to goal. Each lower level, if successfully realized, should lead to the fulfillment of, or contribute to, the next higher level.

The Team finds the logical progression from Outputs to Purpose to be very tenuous. Five of the six outputs concern improved NRM in general but none concern improved NRM specifically for the purpose of increasing agricultural production. Only Output 4 deals with increased production; Output 4a targets increased numbers of community enterprises in general, and Output 4b targets the increased marketing of agricultural outputs -- but not increased agricultural production *per se*. Therefore, fulfilling all the outputs would not necessarily contribute much to increasing agricultural production in the watersheds.

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The logical framework would be internally consistent with the existing Outputs if the project purpose and goal were to develop and extend sustainable natural resource management systems the watersheds of the Fouta. Given what the Evaluation Teams knows about the design of this project, it seems that goal and purpose were changed late in the process without reworking, or adequately reworking, the outputs and inputs.

The Evaluation Team next assessed the appropriateness of the objectively verifiable indicators (OVIs) and the validity of the assumptions in the project logical framework. All data for purpose and output indicators was to be disaggregated by gender. Many of the progress and impact indicators were poorly chosen, as they are imprecise with respect to quality, quantity, and time. A more detailed analysis is presented in Appendix 2.

2.2 Assessment of project design

In support of the project goal and purpose, the project was designed around two core components -- Natural Resource Management and Enterprise Development. Four other project components were design to support the two core components -- Applied Research, Training, Policy Analysis, and Impact Monitoring and Evaluation. The project design did not adequately consider how the activities of the different project components could be integrated with one another, and how the project would deal with support activities, such as waterpoint development.

The project design contained a major weakness in lacking a specific component for sustainable agricultural production and the technical expertise necessary at the Project Management Unit (PMU) and the WMU (Watershed Management Unit) levels. The design also made no provision for primary education, which the Evaluation Team considers as essential for long-term sustainability.

The design decision to operate in three geographically-isolated watersheds of generally very difficult access, with a Project Management Unit in Labé, has imposed severe logistical challenges to this project.

3. EVALUATION OF PROJECT IMPLEMENTATION

This section of the report analyzes the progress made in project implementation according to major project components and issues. It thus forms the basis for the Recommendations in Section 4.

The presentation begins with a consideration of broad issues of villager participation and training (Section 3.1). This section followed by an analysis of production and enterprise development (Section 3.2) and natural resource conservation and management (Section 3.3). In each of these first three sub-sections, general strategies and technological approaches have been summarized in a table. Attention then turns to supporting components, which include training (Section 3.4), applied research (Section 3.5), policy analysis (Section 3.6), and monitoring and evaluation (Section 3.7).

For each of these seven sub-sections, progress achievements are reviewed. Progress towards achievement of outputs based upon the framework's objectively verifiable indicators (OVIs) is reviewed. (The reader is encouraged to refer also to Chapter 2, where the logical framework is evaluated, and in particular to Appendix 2, which is an analysis of the appropriateness of the OVIs themselves. A copy of the logical framework can be found in Appendix 2.)

General issues of project management are addressed in Section 3.8. Overall issues of impact and sustainability are presented in Section 3.9, and Section 3.10 considers major lessons learned.

3.1 Participation

The project design advocated placed heavy emphasis on obtaining the full participation of watershed residents in appraisal of conditions, and developing plans for interventions and village-level resource management plans. The design called for local sociologists on the field staff, and advocated building upon local practices and local social organizations. The project was intended to place particular focus on working with women.

3.1.1 Overview

Studies undertaken by the Land Tenure Center (LTC) have been very useful, and have lead to innovative contracts between market gardening groups and land owners. Traditional land tenure poses major constraints to the development of sustainable land use systems and to the equitable sharing of benefits from the project. The LTC research activities were not as closely integrated with those of the PMU and WMU staff as it might have been.

The Project conducted rural appraisal exercises in the WMU villages at a very early date. These were highly valuable for understanding villagers' priorities and constraints and for the development of annual work plans. This approach has not been developed as far as it

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might have been to involve villagers in a truly participatory process of planning, implementation and periodic evaluation.

Village resource user and management structures are seen as key to long-term sustainability and the empowerment of villagers to manage their own resources. During the first year of the project, village management committees were established precipitously, in a top-down manner. They were not intentionally based on existing organizations. The viability of these groups to date seems to be mixed. Some are very weak. Others show potential for becoming meaningful institutions, which could form the basis for true management of village lands.

Even during the project design, the project recognized the importance of gender issues and working with women. None of the technicians originally assigned to the project, however, were women. The project subsequently hired women extension agents to work with women's groups. As discussed below under gender issues, the project has made considerable efforts to work with women, help women obtain access to land for gardening, lessen women's workloads, and encourage their participation in training and resource management. On a national-policy level, gender issues have been addressed within the context of land tenure issues.

The project has worked to identify the needs of the local watershed populations. This approach began with rural appraisal exercises, which provided a good understanding of the local villages and local priorities, and served as the basis for the project's annual work plan. It seems, however, that villagers have had limited roles in participating in the appraisals and planning of activities.

Extension techniques have focused on developing field trials and demonstrations with local farmers. Other methods used included videos, technical notes (*fiches techniques*), rural radio programs, and study tours. Techniques have tended to be top-down without a major emphasis on interactive and innovative collaboration. Project technicians and advisors have received limited training in extension techniques.

Project technicians have worked with watershed residents on community, group, household, and individual levels. The project has encouraged voluntary participation: in some areas, however, this approach has favored particular individuals, families or villages with multiple project interventions.

Village women and men have been encouraged to form economic (income-generating) groups. Often the group members have limited skills in literacy and numeracy needed for financial management. Some of the activities, particularly for women's groups, seem to offer only marginal financial returns.

Limited collaboration has occurred between the project and local nongovernmental organizations, primarily in the area of training for staff members and villagers.

Watershed residents appreciate the project interventions, and are willing to cooperate on future activities. Most villagers seem to be awaiting project proposals for future efforts, and are not yet generating ideas on their own.

The villagers in the project area rarely include improved natural resource management in their priorities. Firewood is not perceived to be in short supply. The project has had to balance villager priorities for roads, schools and water point development with the project's goal and components. This has resulted in a significant amount of project resources going into these entry-point supporting activities (*mesures d'accompagnement*). These activities have not been as closely linked as they might have been into strategies for achieving project goals.

3.1.2 Socioeconomic factors affecting project implementation

In designing the project, and during subsequent implementation, efforts have been taken to analyze the sociocultural and economic setting of the three pilot watersheds. These analyses have been designed to consider how the project might best meet local needs, work with local people, and assist them with their development. During the early stages of the project design, rapid appraisals were conducted in the Diaforé and Koundou watersheds.

The project began its field activities in the three watersheds in late 1992. In early 1993, work was done through rapid appraisals and meetings with villagers, to identify villager concerns, situations, and possibilities, and to serve as the basis for identifying annual work plans. Similar efforts have been subsequently carried out each year, as the basis of planning subsequent activities. The most detailed sociocultural analysis has been the research conducted under the auspices of the Land Tenure Center. They did research on each of the three watersheds, as well as subsequent case studies elsewhere in the Fouta and Guinea.

The project design originally called for sociologists to work with the project. Although Guinean sociologists were assigned to work in two of the project watersheds, they have been assigned responsibilities for development of community enterprises, rather than working to understand local patterns of social organization. The project staff had proposed adding Guinean sociologists to the technical advisory team, but this step was not taken due to unavailability of local counterpart funds. Social scientists have been involved in the land tenure studies, as well as short-term consultancies concerning women's participation in the project and monitoring and evaluation guidelines.

Numerous aspects of the local communities need to be thoroughly understood before embarking upon project activities. Among the most important are the social differences that exist on the basis of ethnicity, class, gender, age, and access to various resources, such income, education, land and tree tenure, animals, other material resources, communication and transport, availability of technology, and types of social organization. It would also be important to understand why certain natural resources management

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techniques practiced in the past, such as building of rock lines and keeping cattle in night corals, were discontinued, and whether past social constraints to these activities still exist.

Ethnicity and class are important factors in this region, significantly shaping access to land and other resources. In much of the Fouta Djallon, the dominant ethnic group is the Peul. Historically, Peul society was feudal, organized on the basis of a noble (*Fulbé*) class, which owned land and cattle, and their serfs (also referred to in the literature as captives or slaves) (*Baleebé*). The serfs worked the agricultural land of the nobles on a sharecropping basis. Other social classes existed, such as the artisan caste, e.g., blacksmiths. Traditionally the nobles lived in certain villages, and their serfs lived in adjacent hamlets. Although slavery was outlawed during the colonial period, and again during the First Republic, consciousness of these social differences remains. They are still significant, for example, in religious and cultural roles.

These historical patterns still shape patterns of land and cattle ownership, and thus are key factors in determining agricultural production and natural resource management practices. In two of the project watersheds, Diaforé and Koundou, the Peul are the dominant ethnic group. In Koundou, the inhabitants of Linsan-Saran are Sarakollé. In Dissa watershed, the original inhabitants and owners of the land were Sousou. Peul have immigrated into the area, where they have acquired limited land rights and are still regarded as the "guests" of the Sousou.

Ethnicity is also important in shaping gender roles. Peul society is patriarchal and patrilocal, and women do not own or inherit land. These customs inhibit women from planting trees, as tree tenure rights are linked to land tenure. Even when men leave the Fouta for years, to work in neighboring countries such as Senegal, Gambia, Sierra Leone or Liberia, their wives who stay behind have limited opportunities to make major land management decisions. Among the Sousou, the situation seems more relaxed, and women have more freedom to make independent decisions, concerning resource management or deciding to undertake income-generating activities.

These three ethnic groups all speak different languages. As the majority of the inhabitants are Muslim, some villagers have received Koranic instruction and know Arabic. This situation complicates the work for the project's field staff, as they often need to speak two local languages to work in a given watershed.

The project has based its approach to working with the local population on several key sociocultural issues, such as gender, land tenure, access to labor, money, and other resources, and level of education. (Some of these items are discussed in more detail in the following sections.) The project staff has encouraged the creation of resource user (producer) groups and village-level resource management committees. They have also worked some with local political authorities, and with existing village-level social groups or associations.

3.1.3 Project approaches to working with local population

It should be recognized that the project staff has made considerable efforts to work with the local women and men in the three pilot watersheds. Given the cultural milieu and local sentiments toward outside authorities, the field team have been able to make considerable progress. Two of the three watersheds, Diaforé and Koundou, have been relatively isolated, with little prior contact with government officials or development projects. The Evaluation Team was told by project staff that their approach to working with the local people is considered to be the most participatory approach yet used by any of the Fouta watershed projects.

A quite different approach to promoting development is being launched by the Upper Gambia project, which uses local NGOs to promote village-level organization and development. This latter approach sounds promising, but it is much too early to assess its impacts on the ground.

Table 1 presents a summary of project strategies and technological approaches used, and other technological approaches recommended, for promoting the participation of watershed residents in project activities.

Rapid rural appraisals

The Evaluation Team believes that an important distinction exists between Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA), although the two approaches are often confounded in the literature. Essentially the difference is the degree to which the local people participate. In a RRA, the local people are important in providing information, which outsiders assess and analyze, and use as the basis for development plans. In a PRA approach, however, the local people themselves are involved in the collection of the information, its analysis and the development of subsequent plans. The outside technicians or consultants, thus, act primarily as facilitators and resource people to the local people.

The PRA approach may be used to assist villagers to develop their own village-level resource and land use management plans, identify what they can do themselves, and where they need outside inputs, of materials, technical assistance or funding. A detailed example of this approach has been documented for a project in Kenya, and guidelines prepared.¹ Similarly, other work has been done to use PRA techniques for participatory

¹. Program for International Development, Clark University and National Environment Secretariat, Kenya. 1989. An Introduction to Participatory Rural Appraisal for Rural Resources Management. Clark University, Worcester, Mass.; National Environment Secretariat, Egerton University, Clark University, and Center for International Development and Environment, World Resources Institute. 1991. Participatory Rural Appraisal Handbook: Conducting PRAs in Kenya. World Resources Institute, Washington, DC.

Table 1. Participation: Strategies and Technological Approaches

STRATEGIES USED	TECHNOLOGICAL APPROACHES USED	OTHER TECHNOLOGICAL APPROACHES RECOMMENDED					
Improve access to land (address tenure constraints)	Negotiation of land use contracts for gardens and spring planting LTC work on national-level policies	Other land contracts, e.g., exterior fields Greater collaboration between LTC and field staff in watersheds					
Promote women's participation in NRM and enterprise development	Women extension agents Women's groups and mixed groups Women's representation on resource management committees Women use savings rather than credit	Clarify roles of women extension agents Work with individual women as well as groups Promote credit use					
Villager mobilization for community activities and NRM	Resource management committees Proposed co-management of Nialama Forest	Expand committee concerns Collaborate with other institutions (e.g. CRDs) Co-management requires long-term commitment					
Promote local NGO involvement	NGO training used for few activities, e.g., animal traction	Greater use of local NGOs for training and extension work					
Extension techniques to disseminate information and transfer technology	Some focus on model/pilot farmers of specific villages Extension training with groups Meetings and visits, Demonstrations Videos, radio shows Fiches Techniques Study tours	Efforts to ensure equitable access to extension (incentives for field staff) and project assistance Wider range of interactive extension approaches Broaden role of women's extension advisor More visits by staff and villagers to other projects PCV environmental education					
Research trials and demonstrations	On-farm research Subsidies for rock bunds Proposed subsidies for cookstoves	Increase farmer understanding of research Encourage innovation Consistent policies regarding subsidies					
Develop sustainable approaches to improved NRM and production	Participation in assessment of needs, constraints, priorities	More participation in planning, implementation, monitoring and evaluation Broader land use plans Support basic primary and adult education ?					

monitoring and evaluation, sometimes referred to as Participatory Assessment, Monitoring and Evaluation (PAME).²

The project staff has conducted Rapid Rural Appraisals³ with the villagers, and worked with the villagers to identify village needs and priorities. It is the understanding of the Evaluation Team, however, that information from these appraisals has been primarily analyzed by the WMU and PMU teams, and used as a basis for planning their annual work plans.

This degree of local involvement provides a good basis for a more participatory approach. The Evaluation Team spoke with many villagers who indicated that they were pleased with the project interventions, and would be glad to do whatever else the project staff might suggest. A few villagers spoke about how they have learned to work together on community efforts, such as diversion dikes to protect their village from floods, and can use this approach for other community efforts. What is really needed now is to take the next step -- to promote ways of working that will assist the villagers to analyze their own situation and decide what to do next, to assume responsibility for their own development and management of resources.

Social organization issues

Changing macro policy environment

Since the death of Sekou Touré in 1984, the Government of Guinea has been changing its national policies. Efforts have been made to open up the economy and promote decentralization. Repressive taxes in kind (*normes*) have been lifted, providing stimulus for development of the rural economy. These changes were already underway when the project was being designed, but have developed further since that time.

Significant policy changes have been made, to give people more control over development decisions at a local level, and to provide for greater local participation in resource management. Key developments have been the creation of Rural Development Committees (*Comites de Développement Rurales*, CRDs), and an adoption of a new approach to agricultural development (*Lettre Politique de Développement Agricole*). Similarly, the Tropical Forestry Action Plan (TFAP) developed for Guinea in 1988 calls

². See, for example: Davis-Case, D'Arcy. 1989. Community forestry: participatory assessment, monitoring and evaluation. Community Forestry Note 2. FAO, Rome.

³. Although the project documents refer to Participatory Rural Appraisal, the project staff were trained in Rapid Rural Appraisal techniques. These RRA methods were initially used for the Land Tenure Center's research studies in the three watersheds and then for subsequent evaluation of village conditions. The training was conducted by a co-author of a French manual on this approach during earlier work in Senegal (*Introduction à la Méthode Accélérée de la Recherche Participative* (MARF), Rapid Rural Appraisal: *Quelques Notes pour Appuyer Une Formation Pratique*, Bara Gueye et Karen Schoonmaker Freudenberg, 2ème Ed., 1991).

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for greater public participation. (In 1994, however, the Government decreed that all illegal occupants of classified national lands, including national forests, would be evicted.)

The CRDs are locally elected, and represent the villagers within a Sous-Prefecture. They are supposed to receive half of all local taxes, and 40 percent of the forest taxes and permits fees in their locality. With this money, then, the CRDs can decide upon a local development program, based upon local needs and priorities.

The project's approach to working with residents in the three pilot watersheds is supportive of the Government of Guinea's efforts to decentralize development and develop local responsibility for resource management. The project has worked with a variety of social and political groups, and non-governmental organizations. The project has encouraged the formation of groups to carry out economic activities, as well as management committees for broader community resource management activities. Some of the management committees seem to be adaptations of earlier village-level committees. In addition, the project has also sought to work with local authorities, such as the Rural Development Committees (CRDs), and the Sous-Prefect and Prefect, and their staff.

The Evaluation Team obtained the impression that the project primarily worked with the village chiefs, the village management committees (created through the urging of the project), and the resource user/producer groups (many of which were created with the project). Some existing social organizations or traditional leaders, such as the *Conseils des Sages*, did not appear to have been greatly involved in project activities.

Producer groups

Village women and men have been encouraged to form economic (income-generating) groups. Some groups are composed of all women members, some of men, and others are mixed. They work on a variety of activities, such as dry-season gardening, rainy-season cash crops, e.g., small (hot) peppers, soap making, and fabric dying.

These groups have received varying amounts of training in enterprise management and technical interventions. Often the group members have limited skills in literacy and numeracy, which makes financial management more difficult.

Watershed staff members have found land contracts to be a useful tool for assisting gardening groups in obtaining access to land. For example, a women's gardening group might be able to work out a five or ten-year contract with a landowner. They have also been used for area adjacent to water sources, where the project has promoted tree planting. LTC introduced the idea of, and pattern for, these contracts. The watershed technicians have been subsequently negotiating such contracts. These contracts are generally well prepared. The biggest impacts have been in gaining land use rights for Peul women, who do not own land.

Village-level resource management committees

Women and men living in the pilot watersheds have been encouraged to form village-level resource management committees. The committees were proposed by project staff, rather

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than evolving out of existing social organizations and structures. The project encouraged the communities to choose both women and men for these committees.

A few observers have expressed concern that some of these committees were quickly set up to respond to the project's suggestions, rather than evolving out of indigenous social organizations. In some villages, the committees may represent the elite. The role of women on these committees is also unclear, as women do not traditionally have leadership roles in local society. In some villages, it is the women who are responsible for collecting the household contributions for the maintenance of capped springs or wells. Furthermore, by having women on the committees, they can function to inform and mobilize other village women.

The selection process for these committees is not always clear. In one village, for example, the Evaluation Team was told that the village previously had a committee to manage a borehole well and foot pump that SNAPE had installed. When the project requested a committee, the previous committee was transformed into the new committee. The committee explained to the Evaluation Team that they were chosen by the villagers, but that villagers did not have a formal election to choose the committee.

These committees have worked on mobilizing community members for community resource management activities, such as managed water points (springs, improved wells), reforestation around water sources, and construction of rock lines. Most committees have been organized around a single purpose, such as managing a capped spring: few have yet begun to think about broader resource management and development issues.

The management committees operate in addition to other decision-making bodies that operate at the village and sous-prefecture level, such as the Sector Heads (*Chefs du Secteurs*), the recently created Committees for Rural Development (CRDs), and the *Sous-Prefet*. Other traditional authorities include the Council of Elders (*Conseil de Sages*) and the Muslim religious leaders (the *Imans*).

The CRDs are particularly important, as they are elected by the local population, rather than being appointed by the central government. The CRDs now have control over half the local tax revenues, which is budgeted and programmed for development activities. It seems that it may be important for the project to increase collaboration with the CRDs in future activities. The Diaforé CRD has already formally submitted a request to the Ministry, to have the GNRMP project extend its activities beyond the watershed limits to encompass the entire Sous-Prefecture of Diaforé.

Non-governmental organizations

Although a wide variety of informal groups and associations exist throughout Guinea, the development of formal non-governmental organizations and private voluntary associations is relatively recent, since the death of Sekou Touré.

According to the Coordination Service for the Interventions of NGOs (SCIO), over 160 NGOs are registered in Guinea. While many NGOs exist on paper, only a handful have

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more than one or two key staff members, and are carrying out rural development activities. Currently, some of these NGOs are working to establish a national federation of NGOs. The majority of the NGOs are based in Conakry: few have operational bases elsewhere.

The project has already worked with some local and international NGOs, primarily in the area of training for staff and villagers. Two national NGOs with good reputations that have offices in Labé are the Guinean Union of Volunteers for Development (UGVD) and the African Training Center for Development (Centre Africain de Formation pour le Développement, CENAFOD). UGVD staff members visited the project's three watersheds in 1993, and prepared a report on possible areas of collaboration. Since then, UGVD has worked with the project to provide training in animal traction. Two other NGOs, ACT and Centre de Formation pour l'Élevage (CEEL), have also assisted with training in this area.

While the project is, by definition, a temporary structure, indigenous NGOs will continue to operate in Guinea. Efforts to use qualified NGOs should be encouraged, especially for rural *animation*, extension and training. The organizations might be able to play an increasing role in these areas in the last two years of the existing project, and in any subsequent phases or extensions of the project.

Several well-respected international NGOs are working in Guinea, and might be possible collaborators with the project in the future. Such NGOs include Plan International (Guinea), Volunteers in Technical Assistance (VITA), Adventist Development Relief, OIC Guinea, and Africare. Africare, for example, is currently assessing the non-governmental organizations working in Upper Guinea and their capabilities, with a view toward developing a training project to build up NGO capacities. Based upon the outcome of this experience, Africare might be in a position to undertake similar work in the Fouta Djallon, in collaboration with this project.

Gender issues

Although virtually all of the land is owned by men, women have important use rights and undertake much of the agricultural labor, as well as household and child care activities. This vital role of women in the local society and local economy was well recognized when the project was initially designed. The project design process took particular efforts to solicit the opinions of village women as well as men.

The original design assumed that project staff would include a number of women technicians, to would facilitate work with women in the watersheds. The original intent was to fully integrated women into the project in all relevant activities, and to have women as professional members of the project staff. The project, therefore, was planned to address gender issues without having a separate Women in Development (WID) component. (Wide experience has shown that often when project's have a separate WID component, women's activities tend to be marginalized from the mainstream project activities.)

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The Guinean Government, however, did not assign any women to technical positions in the three watersheds. Instead, the GOG hired three women to serve as women's extension agents (*animatrices*). This approach -- of having separate women's extension agents in addition to the male technical specialists, who work on women's development (*promotion féminine*) -- has been widely used by other projects in the Fouta. While it is invaluable to have women staff members for extension work with women villagers, this staffing pattern has certain problems.

The project staff has made efforts to work with, and benefit, women. The basic strategy employed has been for the women extension agents to work on mobilizing women to participate in community efforts and working with women in groups for small-scale enterprise development. These women technicians work in collaboration with other watershed technicians on various interventions. The project staff has discovered, however, that it is important for the women extension agents to have their own specified activities and work plans, rather than just working with the other technicians in other components.

In June 1993, the project engaged a short-term consultant to examine project activities with women and gender issues. She recommended that the project hire a technical advisor to address these issues, and provide support to the three women extension agents working in the watersheds. The head women's extension agent, a Guinean woman, was hired in late 1993 as a member to the technical assistance team.

Other women have work with the Project in a technical capacity. The Land Tenure Center Project Director, the RRA trainer, and consultant on co-management of Nialama Forest have all been women. Several Peace Corps volunteers have worked with the project. Of the first group, only one woman volunteer completed her tour with the project. The second group of volunteers contained four women and two men. The third group, slated to arrive in September 1995, are all women.

Women have been involved in community and family-level natural resource management efforts, such as planting trees around springs, installing rock lines, or fodder banks. In establishing the village-level resource management committees, the project worked to ensure that some women were on these committees. Although the women may not take a lead role in these committees, their membership gives them the opportunity to represent women, pass information from the committee to village women, and mobilize women in support of community initiatives.

Some interventions, such as capped springs and improved wells, have noticeably benefitted women, in terms of reducing labor time in obtaining water for household needs and gardening. In one village, for example, the Evaluation Team was told that formerly, during the dry season, women might have to wait in line for five hours to obtain a bucket of water, but that with the capped spring, women could now get water in half an hour. While cleaner water benefits the entire population, in terms of reduced disease (particularly intestinal diseases and diarrhea among children), women additionally benefit in terms of reduced time spent caring for sick children and other family members.

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Other ideas have been developed for addressing women's time constraints. As women spend a large amount of time in food preparation, the project has been interested in assisting them through labor-saving technologies. Project staff members have learned about metal-capped pestles, which can significantly reduce the amount of time needed to pound grain. To date, however, no work has been done to extend this technology.

Local blacksmiths have been trained to make fuel-efficient metal cookstoves, which economize both on fuel consumption and cooking time. The project has been thinking of training village women to serve as extensionists, to demonstrate and sell these improved stoves at a subsidized price to watershed residents.

Given that the watershed residents do not perceive fuelwood shortages, they may not consider improved stoves to be a priority. Based upon wide experience with improved cookstove programs in the Sahel, and elsewhere in Africa, it seems that the strongest markets for improved stoves would be in the urban areas, where people must buy their firewood or charcoal. The Evaluation Team questions the sustainability of subsidizing sales of cookstoves to rural women.

Women's activities geared toward generating income require investments of time. The project has promoted activities such as soap-making, dying cloth, gardening, and small-scale commerce. Ideas have also been discussed for introducing technologies for processing food, such as drying fruit, making tomato puree, and producing manioc flour. (Other projects in the Fouta, such as the FIDA Project, have already been promoting such technologies, and would be a good source of information for the project.)

Some women's income-generating activities, such as soap-making or dying cloth, seem to offer women marginal economic returns, at best. A six-member women's soap-making cooperative located in Kokolou, for example, has only manufactured soap three times since August 1994. They have run into problems in securing needed materials, such as the palm oil. The women each contributed GF 15,000 at the beginning, to create an operating fund of GF 90,000. To date, their revenues have amounted to GF 133,750, or GF 43,750 in profit. Of the profit, GF 37,000 has been invested in material for their next batch of soap. The women interviewed, however, spoke of how they value the activity.

The project's Community Enterprise Development staff has worked with Crédit Mutuel, to develop provide loan guarantees for some enterprise activities. Most project staff members, however, encourage watershed residents to build up their savings rather than seeking credit. To date, none of the loans issued with the help of the project have gone to women.

For example, a women's group in Linsan-Saran wants to learn improved dying techniques for traditional fabric. When this group of 17 members was created two years ago, each member contributed to create a fund of GF 100,000. Subsequently, each member also donated five measures of peanuts, which were sold to add GF 17,000 to the account. As they decided that this amount was too small to begin their activities, they have

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subsequently used their money for buying smoked fish, rice, and fabric in Labé and reselling it in Linsan. They were able to build their account up to GF 311,550. In November, they spent GF 191,400 to purchase many of the materials they need for their dying activities, and now are awaiting training.

Besides the monetary benefits, these activities may offer other benefits, such as increased availability of soap at the village level, and social, economic, and political benefits from working together in a women's group ("empowerment"). Some of the women were very adamant about their preference for working in women's groups, as opposed to mixed groups with men, as it gives them the opportunity to make the decisions and control their own money.

Women's involvement in dry-season market gardening seems to offer the most promise, particularly in terms of income and improved family nutrition (increased variety of foods). Women face a number of constraints, which include access to adequate water, limited agricultural inputs, plant pests and diseases. Several women's gardens have suffered from animal depredation, either from domestic livestock or wild animals, due to poor fencing. Fence construction and repair must be done often, because of termite damage. Traditionally, making and repairing fences is the responsibility of men. Women's gardening groups, therefore, have to either convince their husbands to help them, or pay young men to build or reinforce the fences. If the project can do more work to promote live fences, women would benefit. The land use contracts have been particularly valuable in assisting women's groups in gaining access to land.

The women extension agents seem to be well appreciated by the village women. The role of the women extension agents in the project work, however, has not been clearly defined. At various points during the project, they have been considered to be responsible for all extension activities, all extension activities with women, or enterprise development activities with women. The women agents have not been assigned an area of technical expertise on the watershed staff. As much of their work has involved women's market gardening activities, perhaps it would be suitable for these women agents to function as the watershed agronomists. Such a responsibility would require that they receive more training in this area.

The project paper specified that work would be done on the policy dimensions of gender. It is the policy of both the Government of Guinea and the U.S. Agency for International Development to promote the participation of women in development activities. In operational policy terms, the GOG, USAID and project staff have taken many important steps to ensure that women benefit from training and other project activities. (The training is further discussed in Section 3.4.)

On a national policy level, the project has been promoting more equitable access to land for women in its work on land tenure policies. The project has not, to the knowledge, of the Evaluation Team, done anything to address national-level policies concerning education of women, access to credit, women's workloads, or women's participation in management of common resources. A STTA consultant examined gender issues and

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women's participation in the project activities. As the internal evaluation noted, although she was supposed to examine gender-related policy issues, her report did not do so.

The project staff argues that it has contributed to policy work on gender issues through studies on women's workloads, and through workshops. In October 1994, the project conducted a workshop in Labé, concerning income-generating activities and appropriate technologies to lighten workloads for rural women. The 44 workshop participants included not only project personnel, but also representatives of other workshops and projects. The project plans to sponsor another workshop relating to gender issues. The Evaluation Team considers that these activities have been beneficial in dealing with gender issues, and promoting women's participation in project activities. The studies and workshops, however, have not been directly linked to national-level policy dialogue or change.

Extension, training, technology transfer and information dissemination

The project has provided watershed residents with training in technical, enterprise development and community organization skills. Thus, villagers have received training in natural resource management techniques, such as construction of rock bunds or planting of agroforestry forage blocks, agricultural production techniques, such as growing onions as a cash crop or animal traction, and non-agricultural enterprise techniques, such as manufacture of soap or improved cookstoves. They have received training in enterprise development skills, such as feasibility and market studies, basic numeracy and accounting, and use of credit. With respect to organizational skills, the project has worked with villagers on activities such as creation of enterprise groups, resource management committees, and negotiation of land contracts.

In developing pilot approaches, the project has focused on developing field trials and demonstrations with local farmers. Other extension methods have included use of videos, technical flyers (*fiches techniques*), rural radio programs, and study tours to transfer introduced technology and disseminate information. The Evaluation Team was shown some of the technical flyers, which are translated into the local languages. These flyers are primarily text, with few illustrations. Some present an issue, rather than providing detailed technical instructions -- for either the field technician or the villager -- to carry out a specific intervention. The DNFF has assigned one staff member to work with the project on media presentations. To date, five radio programs have been prepared, for transmission from the Labé and Kindia stations.

Extension techniques have been rather conventional and still tend to be somewhat top-down, with limited efforts to encourage more interactive and innovative collaboration. Although all project technicians and advisors are working on extension efforts, they have received limited training and technical advice in this area. More study tours to visit nearby projects should be undertaken. It would be useful if the head women extension agent's responsibilities could be broadened, to backstop the entire extension approach.

The Evaluation Team believes that a broader range of extension approaches and extension tools should be employed, to support more participatory work with the villagers. Some techniques, such as those developed by Groupe Recherche d'Appui et de l'Auto-promotion Paysan (GRAPP) in Bobo-Dioulasso, Burkina Faso, are particularly appropriate for stimulating and facilitating village-level discussion and analysis of issues. Other techniques used successfully in other regions of Africa, which might be applicable here, include puppet shows, live drama, role playing, development of more visual material as technical guides for farmers who may be illiterate (e.g., comic books, or illustrated step-by-step brochures for various techniques, such as tree planting). More farmer study tours within the Fouta should be organized.

The extension efforts should stress building upon local knowledge and encouraging farmer innovation. During the Evaluation Team's visit, many watershed residents expressed their appreciation of the advice that they have received from the WMU staff. The staff, however, also needs to try to understand why farmers do not always follow their advice. For example, the Evaluation Team visited one women's group in Diaforé watershed that was growing onions with project assistance. Several of these women, as well as their neighbors, also were growing onions in their own gardens. Although the WMU staff had trained the women to grow onions in separate beds in the group garden, in their own gardens they mix the onions with other crops. Project staff members have expressed disapproval of this practice. Often farmers have very valid reasons for experimenting with different interventions, and such innovation should be encouraged, rather than criticized.

3.1.4 Progress achievements

The project has made progress in increasing the capacity of watershed resource users to plan and manage resources, and in training them in production, enterprise and natural resource management skills. Progress on Outputs 2 and 5, as they pertain to villagers, are discussed here. (Output 5 as it pertains to GOG personnel is discussed in Section 3.4.2). Progress on Output 4 is discussed in Section 3.2.3. Outputs 1 and 3 are discussed in Section 3.3.3.

Output 2. Increased capacity of watershed resource users to plan and manage common watershed resources, especially water sources, forest and pastures.

OVI 2a. Community representative group (CRG) established.

The project has worked with local communities in the three watersheds to establish community resource management committees (*comités de gestion*). According to the project records, 28 management committees have been created in the 3 watersheds. Over 40 percent of the members are women.

The Evaluation Team met with one committee in each of the three watersheds evaluated. In all three cases, the committees had been set up to manage improved water sources in the villages. It was not possible to judge how "representative" these committees are.

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OVI 2b. CRG participation in NRM planning.

To date, the committees have been dealing primarily with one or two NRM interventions. In Dissa watershed, one committee was formed around the objective of managing a water source improved by the project: some members of the committee had previously been members of a prior committee set up to manage a borehole well put in by SNAPE. This committee told us that they were also surveying their village lands, to monitor land use, watch for fires, and protect against incursions by outsiders cutting charcoal. In general, the committees are more focussed on the management/maintenance of water sources and other interventions than in the planning of resource use options.

OVI 2c. CRG identifies priority problems, identifies solutions and implements decisions.

The committees seem to have been formed primarily around water point development. To date, they seem to have been involved in identification of priority problems and identification of solutions only to a limited degree. The most common explanation that the villagers gave for the creation of these committees was to safeguard the acquisitions (*les acquis*) from the project.

The rural appraisal approaches used by the project staff have been useful in identifying the priority problems of communities. This approach, however, has not been used with the management committee *per se*.

The Evaluation Team was generally told that villagers and committees appreciated the project interventions, and would be glad to work with the project in other activities that project staff might suggest. Only one of the three committees with whom the Evaluation Team met indicated that they could decide on their own priorities, develop strategies for action, and continue on their own after the project ended. They compared the creation of their committee to giving birth to a baby -- now it had a life of its own, and would develop even after the project is over.

Output 5a. Approximately 30 GOG personnel and watershed community leaders trained in NRM.

Output 5b. Improved NRM skills among GOG staff and watershed community leaders.

OVI 5b. Number of resource users trained annually.

In the USAID Project Implementation Report for the period from October 1994 to March 1995, the project has trained 175 men and 92 women resource users. While it is encouraging to note the high number of women resource users trained, the question still remains -- why have twice as many men as women participated? Is it due to training subjects, the location or timing of the training, or other factors?

Early in 1995, the Project sent three staff members (two women, one man) and six watershed leaders (three women, three men) on a study tour to a natural resources

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management tour in Benin. The Evaluation Team spoke with the three staff members who participated in this course, as well as the woman representative from Diaforé watershed. The staff members expressed differing opinions as to the usefulness of this trip for the villagers, but all felt that it was worthwhile for the technicians. The village woman stated that she had found the trip worthwhile, but she has not yet used anything that she learned on the trip. The Evaluation Team also visited a nursery in Dissa, which is run by a man who also participated in the study tour to Benin. On this trips he had learned about making baskets to serve as plant containers (in lieu of plastic pots), so was experimenting with this approach in his own nursery.

The Evaluation Team found it difficult to assess improved NRM skills of villagers resulting from project training activities. The Evaluation Team did, however, see examples of introduced practices, such as building rock lines, that the villagers have learned from working with the project. (This practice was, however, also introduced during the colonial period and again under Sekou Touré's regime, but subsequently abandoned by villagers.) The villagers' level of skill in carrying out these practices, however, seems quite variable.

3.2 Production and Enterprise Development

3.2.1 Overview

The principal types of enterprises found currently in all three project areas are agriculturally based. This project component is supporting the transition from a near-subsistence agricultural economy to a cash economy. Making these enterprises sustainable is a key element in project strategy. It requires providing area farmers with a complete package of annual and perennial crop production technologies, including soil conservation measures, to enhance and then maintain soil fertility on areas under intensive use in continuous production. This strategy has been constrained by the lack of provision in the project design for an agronomy component and for a long-term agronomist.

The most successful intervention of the project to date seems to be the introduction of dry-season market gardening in the Diaforé Watershed and expansion of similar pre-existing activities in other watersheds. This is the one site where the Evaluation Team got the sense that the project is having a real impact on people's lives, their production systems and their economy. Market gardening is expanding beyond the area of direct project intervention. It is worth noting that a large proportion of the market garden production in the watersheds is controlled by women, who benefit from the technical expertise and other assistance provided by the project.

Some activities, such as improved beekeeping, and tree nurseries are directly linked with better natural resource management. Other non-agricultural activities channel community energy toward non-resource-using activities.

Additional non-agricultural enterprises not currently being helped by the Community Enterprise Development (CED) component identified during the Evaluation Team's visit

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to the three watersheds. Collaboration with PRIDE will help enterprise staff to identify such businesses, and to develop optimal ways of assisting businesses to grow.

The development and expansion of marketing gardening and other income-making activities made it possible for young men and women, who in the past were forced to emigrate, to make a modest living in their home communities. The return of young people to some watersheds not only increases the likelihood of the adoption of some proposed production technologies, but also is likely to strengthen organizations managing community assets (water-points, roads, markets, schools, health centers, etc.).

Credit is a key element in enterprise growth. Consequently the ability of project staff to make arrangements for watershed farm and non-farm businesses to obtain access to credit through guarantee agreements with Crédit Mutuel, has been critical to the successful enterprise development. Increased access to credit, successful repayment of loans, and an expanded customer base for Crédit Mutuel branches serving the project areas are determining factors for the sustainability of financial services and thus to future business growth in the watersheds.

The small enterprise development component has been generally well-conceived and implemented. It has been hindered by the initial lack of qualifications and training of the WMU contractual enterprise staff (sociologists were hired for these positions) and women extension agents.

3.2.2 Strategic Analysis

Enterprise development is a key element in the project strategy. Communities as impoverished and marginalized as those living in the Fouta Djallon can only afford the investment in sound resource management practices if incomes rise through an increase in sustainable production.

The local economy in all three watersheds is based upon agriculture. An production system relying largely on shifting cultivation on marginal soils must be replaced by a set of new systems based on permanent production on a smaller land base. Such systems must incorporate production and soil conservation measures that raise soil fertility in the short-term and continue improving fertility and soil retention in future years. A variety of non-agricultural businesses already exist and have varying potentials for expansion that place little or no demands on natural resources. Furthermore, food production from exterior fields provides only part of consumption requirements with the remainder being supplied by purchases out of earnings from livestock sales and remittances.

Improvement of rural incomes is essential for improving the lives of the watershed residents. The project has approached this issue through the goal of increasing "sustainable agricultural and value-added production for domestic and export markets." For such production to be sustainable, it needs to be based upon more sustainable natural resource practices.

The project design stressed the use of low-input agricultural practices, to introduce techniques that the resource users could easily afford and replicate. In addition, the approaches have avoided the use of chemical fertilizers and pesticides, due to their environmental and human health risks. But the organic farming techniques advocated have been contrary to the goal of maximizing incomes. If the project helps them with a package of improved crops, appropriate production technology and higher incomes, people will adopt associated resource management practices that will ensure that productivity and income increases can be sustained. Table 2 provides an overview of the strategies and technological approaches for agricultural productions and enterprise development.

3.2.3 Technical analysis

Not all of the elements needed to fully implement the proposed strategy of increased production and incomes have been available during the initial project implementation period. Some limitations were intrinsic in the project design, while others resulted from project management decisions. Despite these limitations, the project has made considerable progress in assisting the population of the three watersheds in moving toward the achievement of production and income as well as natural resource management objectives.

Staff expertise

Expertise in agronomy was needed to help establish the crops which could be profitably produced and appropriate production technologies. At the level of the technical assistance team, no provision was made for an agronomist. No agronomists were assigned to cover these needs at the watershed level, although some WMU staff members do have training in agronomy. The lack of staff members working in agronomy has clearly had a negative impact on areas in market crops, levels of production and farm income and reduced both the incentive and the resources necessary to adopt associated conservation practices.

Although community enterprise development and women extension staff members were dealing largely with market vegetable production, most staff members were not trained in agronomy. The enterprise development technical advisor had skills and training appropriate for the kind of activities supported (except for agronomy). The watershed enterprise personnel who were contracted were sociologists, apparently on the assumption that skills in observing community organization were of particular importance. Although a number of the enterprises have some group basis, most enterprises in all three watersheds are individually based. Even in working with group businesses, business skills and acumen are more important for the work that the staff carries out. Such skills would be more often associated with training in business, accounting, or management.

Table 2. Agricultural Production and Enterprise Development: Strategies and Technological Approaches

STRATEGIES USED	TECHNOLOGICAL APPROACHES USED	OTHER TECHNOLOGICAL APPROACHES RECOMMENDED
Intensify agricultural production, through dry-season market gardening	Promote dry-season gardening Organic gardening (low input agriculture) Some waterpoint development Introduce new crops and techniques Limited agronomic tech. advice	Focus more on cash crops Intensive management of best sites Use phosphate and farm chemicals Improvements in fencing Agronomic advice and inputs Full technical package Assess available water and land
Livestock	Training of oxen and owners for animal traction	Training in other uses of oxen Greater use of manure
Poultry and egg production	Raised shelters Improved cocks Egg production	Clarify terms for project assistance in egg production
Animal health	Para-vet training Vaccinations	National policy on fixed prices should be changed
Tree nurseries	Grafted fruit and forest species	Develop locally produced pots as possible Produce vegetable seedlings
Beekeeping	Protective clothing (made by local tailors) Kenyan hives Contracts with Apiguinée	Introduce beekeeping to women?
Agricultural and livestock marketing	Loans Market built in Dissa (with PCV)	Line-of-credit to support higher loans
Farm-market roads	Road and bridge improvements in Koundou Bridge improvements in Diaforé	Road improvement in Diaforé
Group gardens vs. individual activities	Shared fencing and shared waterpoint Group training Individual plots	Promote group activities over individual only when necessary

Table 2. Agricultural Production and Enterprise Development: Strategies and Technological Approaches
(continued)

STRATEGIES USED	TECHNOLOGICAL APPROACHES USED	OTHER TECHNOLOGICAL APPROACHES RECOMMENDED		
Develop alternatives to agriculture and NRM-based enterprises	Promote various small- and medium-scale enterprises	Work with a wider variety of enterprises		
Group and individual training in business and technical skills	Training in numeracy, basic accounting, use of credit Feasibility and market studies Technical training: blacksmiths tailors soap manufacture dyeing fabric	Increase staff training in business skills Increase training in literacy, numeracy, feasibility studies Discontinue marginal enterprises Promote smaller groups, and stress individual rather than group enterprises		
Credit	Credit promoted for agricultural inputs such as seeds, watering cans, oxen, animal vaccines Project guarantees for loans with Crédit Mutuel Project staff have promoted credit to only a limited degree	Credit for fertilizers and pesticides Better credit terms for oxen Revolving lines of credit Inventory support loans (commerce) Buy-back guarantees Promoting credit for women	Training entrepreneurs to train in produce use (e.g. safe pesticide and fertilizer use, cookstoves?)	
Project subsidies (grants)	Limited grants for some inputs (overall self-help philosophy) Proposed subsidies for improved cookstove sales	Project should absorb more risks for new, unproven enterprises Clarify project policies regarding subsidies		

Institutions Supporting Enterprise Development

The enterprise component has worked with a number of outside institutions for training of watershed residents in appropriate skills, such as AMIP and ACT. It has also established a relationship of mutual support with Crédit Mutuel, which has extended the area of coverage of its financial services network to include project area watersheds. Marketing activities have also resulted in contacts with Apiguinée (honey and beeswax purchaser), and with numerous other buyers and potential input suppliers. As the numbers and importance of watershed enterprises increases, a corresponding increase in the number of outside businesses and other institutions is also expected.

Credit

In most small businesses, working capital is an early constraint to enterprise expansion. For a project where expansion of production was a key element to overall project success, a credit component would normally be provided. No such component was contemplated for the project. Had it not been for innovative behavior on the part of the technical assistance team in entering into agreements with Crédit Mutuel to allow watershed enterprises to have access to loans, it is hard to imagine how any significant impact on production could have been achieved. The only alternative would have been to provide grants to enterprises, which goes against the self-help philosophy and the desire for sustainability that are the main underpinnings of the project.

The former COP was initially opposed to the Enterprise Development specialist spending any significant amount of time on credit. A credit consultancy proposed early in the project was rejected by USAID, on the grounds that adequate expertise existed in-country. Nevertheless, adequate time and energy was dedicated by the CED staff to giving watershed residents some initial access to institutional credit. Some help has been obtained from the PRIDE project, but the Evaluation Team believes that further STTA on credit is needed and recommends a consultancy.

Crédit Mutuel is the institution with which the enterprise component has by necessity had the most contact. The project did not include a credit component which, *ex post* was necessary to achieve the objectives of the enterprise component. It was fortunate that: (1) Crédit Mutuel was already providing financial services to areas close to those of the project, (2) it was amenable to expanding its area of coverage to cater to watershed residents, and (3) it was willing to bend its rules to facilitate working with clients proposed and partially guaranteed by the project.

Crédit Mutuel is a credit union operating on a philosophy that accords first priority to member savings. Only when a sufficient volume of savings are available are qualified members granted loans. The credit union principal has been somewhat modified to allow outside infusions of capital from various sources, which has made it possible to expand lending much faster than would be possible using member funds alone. To receive external funding, Crédit Mutuel has had to accommodate concerns of the donors providing capital or guarantees. For example, to serve clients associated with the project,

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Crédit Mutuel has expanded its area of geographical coverage and has reduced the normal waiting period before allowing a new member to take out a loan from 6 months to almost no time at all. Crédit Mutuel has made similar if slightly different accommodations for other donors.

Crédit Mutuel could use some technical support. There is a danger that excessive expansion of its geographical and customer base can have an adverse impact on the institution itself. Crédit Mutuel should modify procedures such as loan repayment schedules to the particular needs of rural clients. It needs to concentrate on achieving a repayment rate higher than its current level of 75 to 80 percent. For Crédit Mutuel to better serve watershed customers, it has already set up a branch in Souguéta. Loan volume is low and loan repayment poor: both will have to be raised to justify keeping this branch open. Discussions are underway concerning opening new market-day sub-branches at Kollet (near Diaforé) and Tiangue-El-Bory (to service Koundou). Such Crédit Mutuel branches would be a major long-term benefit to project area residents. If they are opened, the project should consider providing some small grant support to Crédit Mutuel, such as providing a safe or other equipment.

Worldwide, women are generally good borrowers and very conscientious about paying their loans. Yet for this project, not one woman nor one women's group has yet gotten a commercial loan. The project extension staff have been encouraging women to save and create their own revolving funds, rather than take out loans.

Enterprise Activities

The following sub-sections analyze the principal enterprises whose development has been affected by project activities, and offer specific recommendations.

Market gardening

Market gardening was practiced to a limited extent in all three watersheds prior to the project. Most production areas were small (except perhaps Dissa watershed, with its proximity to the Conakry market). Farmers grew local varieties and sold their produce in local markets. Transportation linking the Diaforé and Koundou watersheds with the outside world limited the ability to produce for national and regional markets. Dry-season water availability limited production in some areas. General knowledge concerning crops and production technologies was limited, as was access to purchased inputs and credit to buy them.

With the help of the Land Tenure Center initially, and subsequently CED staff operating on their own, market gardening groups were able to negotiate land contracts for dry-season gardening with land owners. Such contracts gave members use rights to bottom lands owned primarily by non-members of these groups. The project helped with group organization, some minimal, basic equipment (such as tools and watering cans), other inputs, and technical assistance for the introduction of new crops.

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Diaforé

In Diaforé, the market gardening is concentrated around the water courses, 25-30 springs and more than 100 wells found in the watershed. The project has supported about 160 residents in market garden production; more than 80% are women. Besides those assisted by the project, other women appear to be involved in vegetable production, both within watershed villages and in neighboring areas.

In Diaforé, exotic onion varieties were introduced by the primary school teacher (who had grown them as a youth) the year before the project got underway. Onion cultivation has expanded significantly with project support. It has been successfully supported with a technological package including chemical as well as organic fertilizer and proper planting and bed-height; to date no plant diseases or pests have attacked onions of producers supported by the project. Onion seeds of exotic varieties are available in the Kollet market, although fertilizer so far is not available.

Some farmers outside the project area have imitated these techniques. These farmers interviewed were not using chemical fertilizers. They had had problems with plant pathology for which no solutions nor outside technical assistance were available.

Commercial potato production began this year at the insistence of the vegetable gardeners after an apparently successful trial the previous year by Bareng. The technical package for onions and subsequently potatoes supported by the project includes chemical and organic fertilizers but not pesticides, which have so far not been needed in the project area. (Due to inadequate agronomic advice, however, some farmers obtained diseased seed potatoes.) Equipment consists principally of watering-cans. Inputs are repaid on an annual basis to a revolving fund after each crop cycle; equipment is repaid over a variable number of years into a revolving fund for subsequent use by the group. Thus far, there have been no loans from Crédit Mutuel for market gardening or any other activity in which women figure prominently.

Transport of agricultural harvests, such as onions or the oranges traditionally marketed from the area, will be facilitated by the bridges and minor road improvements built through project efforts. The IFAD project already brought the major stretch of the road from Labé as far as Tougué up to a good standard. Nevertheless the poor quality of the road from Tougué to the watershed will continue to be the major limiting factor on intensification of cash-crop production and thus on family income.

Koundou

In Koundou watershed, market vegetable production of traditional varieties in the vicinity of numerous watercourses, springs and wells preceded the project. In 1990, 300-400 women were engaged in market gardening. Due to the lack of a passable road except during the dry season, this production was destined only for the local market.

The major national highway linking Labé with the Senegalese border has just been rebuilt with support from other donors. The project has brought the spur to Linsan-Saran up to reasonable standards (but is already deteriorating through lack of proper maintenance).

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These road improvements open up new horizons for vegetable production. The proximity of the Labé-Senegal road could be better exploited, through marketing of fruit and vegetable produce to passing truckers.

The project has helped three groups of residents (totalling 25 people, 22 of them women) in market gardening. In at least one case, the project assisted them in digging a well to supply water for hand irrigation.

The technological package does not include chemical fertilizer for two reasons. First, USAID opposes, and producing low-quality (smoky or burnt) honey. This practice also results in a large number of unintended and uncontrollable forest and brush fires.

The project has offered two modifications of this technique. By providing beekeepers with protective clothing, traditional hives can be lowered from the trees, harvested and returned to their former places. The other method uses an experimental modified Kenyan hive (wooden structure with metal roof), designed to be a permanent home for a colony of bees and is thought to give higher yields of honey per hive. Kenyan hives cost about GF 25,000, although costs might be reduced if produced by local carpenters. Both methods are better than the traditional method in that the hives are not destroyed during harvesting and do not cause inadvertent wildfires. The economics of the two methods are still being investigated, since harvesting of both types had just begun when the evaluation team did its field work. Since accurate records are being kept, comparisons of costs can be done once data are all in.

Interested groups of beekeepers are given two or three Kenyan hives for experimentation, and a few suits of protective clothing which they share. (Additional child-sized suits have been provided to train school children in bee-keeping.) They make contributions in honey to cover the cost of these suits and build up a fund to purchase more suits. They plan to have local tailors make such suits (at a considerable saving), copying from the first suits where were store-bought. Groups are also taught new techniques for separating the honey from the wax that do not involve boiling the comb in water (which reduces the value of the honey and eliminates it from any possibility of being exported). Contacts have also been made with Apiguinée, a marketing group based in Labé that buys and markets high-quality honey and beeswax. Apiguinée buys honey for GF 800 per kilogram. When honey is in short supply (right before harvest time), prices are occasionally higher but significant volumes would be hard to sell.

Improved Poultry and Egg Production

Poultry raising, both for on-farm consumption and for sale, has been a risky business in the watersheds. Local poultry take a very long time to reach marketable weight. During that time, they are exposed to various risks and incur increased feeding costs. Diseases sweep through the villages decimating the poultry population, which is almost entirely unvaccinated. Hawks also swoop down during the dry season right into the farmyards, making off with hapless birds.

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The project proposes a simple strategy to improve poultry production consisting of the following elements: (1) construction of a raised shelter, similar to those already used for sheep and goats, using local materials to protect birds from marauding animals; (2) elimination of all local roosters in a village; (3) provision of improved cocks of a race (Isa Brown) known for its fast growth; and (4) vaccination against New Castle's disease.

Women and men benefiting from this assistance were certainly pleased by it. They claimed that the mixed breed chicks grow faster and therefore stand a better chance of reaching marketable weight. They felt that the intervention led to better family nutrition (meat and eggs), higher income (poultry sales), and reduced attacks of disease.

In Dissa watershed, one village leader (in conjunction with other villagers who soon dropped out) asked for project support to set up an egg production facility. The location is good, not far from the main Conakry-Labé road and near Souguéta, so marketing should not be a problem. After innumerable delays, due in part to changes in the final beneficiary of a somewhat expensive pilot effort and to abrogation by USAID of agreements made by the project with the beneficiary, a chicken coop is nearly ready for the first set of birds. The beneficiary is a leader in the community: non-fulfillment of the project's commitment would adversely affect other activities in the community.

Para-Veterinarians

To support the poultry improvement (and presumably other livestock interventions), veterinary services are required. Although the Veterinary Department sporadically conducts cattle vaccination campaigns free-of-charge, it does not vaccinate chickens. The project, therefore, arranged to train two para-veterinarians per watershed. They were trained to give injections, castrate animals, apply anti-parasite medicines and treat wounds, and were provided with a set of veterinary medicine instruments.

Some were encouraged to take out loans from Crédit Mutuel to pay for required vaccines and some small pieces of equipment. Others simply bought their supplies with their own funds. In Diaforé, both paraveterinarians took loans and have been unable to repay them due to insufficient volume of business and low margins on fixed vaccination prices. The Veterinary Department sets national prices for vaccinations. Cost per injection for New Castle's disease (based on 10% losses) is GF 65 and the fixed price per injection is GF 100, leaving a margin of GF 35. Due to the low volume of vaccinations, this profit is insufficient for paravets to earn an income and pay off loans. Some veterinary medicines expired before they were used; others would be opened for one animal and spoil before other animals with similar needs showed up to be vaccinated. Even at GF 100 per vaccination, farmers complain at the high price of vaccination ("you vaccinate ten chickens and you have to sell one to pay for the vaccinations").

Agricultural and Livestock Marketing

A number of loans have been obtained by area residents for marketing of agricultural products and livestock. For products like peanuts, loans cover the cost of the product and,

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if properly designed, would be paid off later in the year when prices rise corresponding to short supply for food or for seed for planting.

Crop marketing loans had all been paid back by the time evaluation team did its field work. Some problems were encountered because loan payments did not track cash flow very closely; the loan was payable in two six-monthly installments over a one year term when the actual business financed by the loan was done after five months.

Livestock marketing loans provide working capital to allow livestock buyers to buy a larger number of livestock and to increase the efficiency of their businesses, since they can bring more animals to market on the same trip with more resources at their disposal to buy animals. Buyers deal principally in sheep and goats in the dry season and cattle during the dry season.

Livestock loans were generally successful. At the time of the Evaluation, some borrowers were behind in payments because of a quarantine on the movement of goats to the Conakry market because of animal disease problems. What they really need is a line-of-credit to support a higher level of operations rather than individual loans.

Non-agricultural small businesses

Blacksmithing

In many watershed villages, blacksmith shops traditionally make and repair tools, and make small traditional stoves. The project has supported community blacksmiths at least in part to promote fuel-efficient stoves to economize on firewood. While not necessarily agreeing with the motivation (since there is no shortage of firewood in any of the watersheds), the project support has been important in allowing smiths to expand their businesses. The production of stoves (which are sold at a 25% discount to watershed residents) has been a new sideline for their businesses. Stoves sell for GF 3000 to watershed residents and GF 4000 to outsiders (GF 5000 with a grill). In some places they also make watering cans out of scrap metal, but in other areas the project purchases plastic watering cans for market gardening groups.

Help has also been provided for numeracy and basic accounting. A number of shops have been helped in obtaining access to loans from Crédit Mutuel based on a 50% guarantee from the project and assistance with loan applications. After the first loans, the project is not providing additional guarantees. Thus some blacksmiths interviewed who had paid back one loan were not immediately taking out another loan. One shop located on the main road in Souguéta would like to take out another loan to finance maintaining an inventory of fuel-efficient stoves for sale to the road trade. What this shop really needs is a revolving line of credit, but it could manage with a series of back-to-back loans.

Carpentry

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Carpenters exist in all three project watersheds. Some found employment in building the watershed compounds (*cités*). Elsewhere they work in putting roofs on schools and in private construction; for example, there is a boom in Lisan-Saran (Koundou) at the present time. Many carpenters also produce furniture.

In Diaforé, virtually no timber remains for cutting. Logging was stopped five months ago, leaving local carpenters without wood to carry on their trade. One carpenter was interviewed in Kouratongo who produces furniture. Because of the current lack of wood, he is unable to continue in his trade. At the time of the evaluation, he was contemplating asking for a loan from Crédit Mutuel. He wants to finance a small inventory of boards and nails, to be able to make furniture on order for local customers (who soon will have cash to spend from their market gardening harvests). If this loan is successful in building up his furniture sales, the business would probably benefit from repeat loans or a line-of-credit.

In Koundou, limited areas are available for logging in some villages. If a proper community forest management plan were ever developed for the classified forest, substantial parts of the forest could be logged.

Brick-making

Where construction is booming, as it is in Lisan-Saran, brick-making is a viable business, with bricks selling for GF 50 each. Brick-makers are charged a fee by DNFF of GF 50,000 per kiln of bricks made (regardless of numbers of bricks which range from 2,000 to 10,000); receipts for these payments are rarely given.

It does require wood to burn the kiln of raw bricks. Brickmakers in Lisan-Saran estimated that it would take five years of continuous brick-making before all trees of the species used would be exhausted within a one kilometer radius of Lisan-Saran.

Food-sellers

Six women in the Diaforé watershed cook chicken and rice for travellers going to the weekly market in Mali. Recently, business has increased substantially as a result of improvements made to the road and bridges in conjunction with the project. The number of vehicles going to the market has risen from two big trucks (before road improvements) to a maximum of seven, including some smaller vehicles like Land Rovers.

During the Evaluation, one woman was interviewed. She has sales revenue of between GF 8,000 and GF 15,000 a week. Her situation is probably atypical since she is the only one who sells donuts (*gateaux*) and cigarettes in addition to chicken and rice. She and the others are looking forward to further road improvements, which they are certain would increase their volume of business. Food not sold to the road trade is sold on credit to village residents who pay later. Project staff members have not yet worked with these women.

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Other food sales exist in the watersheds. Women and children sell oranges and fruit. Sometimes, people will butcher a cow to sell the meat to those going to the market. In Koundou, two restaurants were in operation. Souguéta town had a number of food-selling establishments. Project staff had not worked with these businesses.

General stores (*boutiques*) and commerce

During the Evaluation, one store in Diaforé watershed was visited but the owner was not present. The inventory appeared to be somewhat sparse and the selection of products limited. Such on-going operations could be assisted with inventory support loans, which would benefit the communities through improved product availability and perhaps reduced prices (due to discounts from bulk purchases).

Such stores could conceivably be outlets for fertilizer and other farm chemicals. With project support to assume some of the risk, stocks of fertilizer could be brought in by storekeepers. The project could guarantee the market, with a buy-back scheme for residual amounts remaining at the end of the fertilizer year. Training in safe fertilizer use could be dispensed through the storekeepers, who might be receptive because of the increase in business and because of their generally higher education levels.

In Koundou, one women's group interested in indigo dying has been investing its cash fund in food products (principally rice and dried fish) as well as store-bought ready-to-wear clothing and making a reasonable profit while consistently increasing their funds. For reasons which apparently have nothing to do with profitability considerations, they are determined to work in dying materials, although they could probably make more money by supplying the local market with essential food products.

While this women's group is not particularly interested in small-scale commerce, there are plenty of others who are interested but impeded from going into it or expanding their existing operations by a lack of capital. Such individuals or groups could benefit from project assistance in training and small working capital loans from Crédit Mutuel. These types of businesses are relatively secure and represent good credit risks.

Tailoring

Several villagers have learned tailoring. One interviewed in the Diaforé watershed had spend five years in Dakar. He had come back to the village with a Polish sewing machine valued at about GF 150,000, and was working about 35 % of his time in tailoring. He had also copied a commercially produced bee-keeping suit for the project. (At the time of the visit, he was dedicating the remained of his time to dry-season gardening. He had been helped by project staff in setting up an onion-growing group.) The project has also been considering providing some women with training in sewing.

Soap-making

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Several women's groups are making soap using a new process promoted the project, which does not require boiling the oil. This process thus saves time involved in collecting firewood, and avoids the risks of accidental burns. In addition to the training, the project has provided basins and cutting tables (the major capital cost of soap making). Nonetheless, simply considering variable costs of production and difficulties in obtaining ingredients, the activity appears to be only marginally profitable.

3.2.4 Progress achievements

Progress has been made in terms of the following outputs:

- OVI 4a. Increased number of enterprises formed and functioning around economic interests.
- OVI 4b. Increased tonnage or value of products marketed.
- OVI 4c. Additional cash income generated.

In market gardening, many enterprises are formed around groups which work together to get fencing up and to take care off common assets like watering cans. Actual activities are individual. Most products are marketed locally, although some hot pepper may find its way from Labé, which is its major market, to Senegal. Other products are for the domestic market since the country is a net importer of both potatoes and onions.

Approximately 160 people are now working in groups producing market garden crops on a commercial basis in the Diaforé watershed with project help; 80% of members are women. Fewer people have been assisted by the project in Koundou (25) and Dissa (65). Thus, the greatest amount of progress has been observed in Diaforé despite the fact that this watershed is the most isolated watershed and started from the lowest base of commercial production. The best indicator of success is the enthusiasm of the people involved. Many young men and women now see market gardening as an alternative to leaving the village during the dry season in search of employment. This is the major change wrought by the project to date in Diaforé and to a lesser extent in the other two watersheds.

Several new businesses, like para-veterinarian services and private tree nursery operations, have been established in conjunction with other project activities. Thus the project, by assuring part of the market for services and trees, has introduced new business to the area and taken some of the risk out of starting them up. Blacksmiths have been encouraged to make fuel-efficient stoves and have found a ready market for their products; in some cases they have been able to get loans, which they have paid off. As they are still in business after more than a year, they are likely to survive and may expand now that they have access to credit. These non-agricultural businesses provide alternative sources of income that do not make heavy demands on natural resources. Most of the non-agricultural businesses assisted by the project involve men.

Other businesses have expanded as a result of road improvements and increases in road traffic. In Diaforé, six women who sell rice and chicken passing trucks have noted that

their incomes have increased (but they do not know by how much because they do not keep records). Project road improvements are sufficient ensure the ability to get Diaforé's increasing production of onions and potatoes to market. In Koundou, road improvements have increased traffic, increasing trucks coming to the local markets. Some shops have been opened within the watershed.

Another output has been the introduction of institutional credit to rural areas with no prior access to credit. Despite some difficulties, which are being corrected, most loans are being paid off. This repayment facilitates borrower's future access to additional loans that they need to expand their businesses.

3.3 Natural Resources Conservation and Management

3.3.1 Land Use Types

It is important to begin this section with a brief review of the predominant land uses in the three watersheds, including the Evaluation Team's understanding of the sustainability of these land uses.

Tapades: The *tapades* are the permanent home gardens that are continuously cropped year after year. Soil fertility is maintained primarily through inputs of cow manure; the amount of manure available is not always adequate to maintain yields. Continuous cropping is thus sustained by adding nutrients and organic matter collected from the rest of the village lands to the *tapades*. Contrary to one of the annexes of the Project Paper, many *tapades* are located on steep slopes (some greater than 20%) and erosion is a serious problem. Secure tenure of the *tapades* and their proximity to homes allows management practices which use larger inputs of labor and capital than would be profitable on exterior fields. This is especially true in Koundou Watershed. Despite relatively secure tenure in the *tapades*, some interventions (e.g., planting of trees for live fencing) are still constrained by gender roles of some ethnic groups.

Exterior fields: Exterior, slash-and-burn fields are found in all three watersheds on a range of soil types and slopes and are a major part of the traditional agricultural systems. While the *tapade* is compared to the "sauce" of a meal, the exterior fields are considered the "rice." Thus both are essential components of the traditional farming system. The technical assistance team estimates that about half of all food production comes from the exterior fields. Yields are reported to be declining as fallow periods have declined with growing populations. This is a classic situation throughout Africa. Slash-and-burn agriculture on the exterior fields poses a major problem of sustainability. Traditional land tenure prevents most farmers from owning the exterior fields that they cultivate. Thus a large percentage of farmers have little incentive to invest in soil and water conservation and soil-fertility improvements on the exterior fields. (It is more profitable to place resources in the *tapades*, lowland gardens, or other enterprises). Project activities on these fields under current tenure and usufruct will benefit the land owners in the long term.

Lowland gardens: Lowland gardens are watered from springs and wells in the dry season. The expansion of market gardening on these sites has been one of the principal activities promoted by the Project. High value garden crops are cultivated intensively on small areas close to the water source. Total areas cultivated are small compared to the exterior fields and the *tapades*. Although the potential areas for expansion are small in comparison to total watershed areas, water may be the most limiting factor to expanded development of these gardens, especially following low rainfall years (note: 1994 was a very high rainfall year). Increased incomes from dry-season gardening will encourage its expansion. It is important that the lowlands are not over-developed to: (1) protect farmers from over-exploiting the aquifer and running out water before the harvest; (2) prevent unnecessary clearing of riparian forest; and (3) prevent destruction of wetlands. It is not clear to the team the effect of increased dry-season gardening will have on labor competition for rainy season agriculture (decreased use of exterior fields vs. no effect). Land owners will benefit in the long-term from improvements of the gardens or development of markets for their products.

Non-agricultural lands Except for the *bowals* (grasslands found on very shallow soils over ironstone), most of the three watersheds were probably covered by closed canopy forests before their transformation by local inhabitants. Nutrients were continually recycled within the forest ecosystem. Deforestation is increasing through agricultural expansion and reduced fallow periods. Few areas of forest remain. A major environmental transformation of the watersheds is taking place. With every cycle of slash-and-burn agriculture and with every dry-season wildfire, the plant nutrients held in the burned plant material are lost through volatilization or left as ash (primarily phosphorus and potassium). Much of this ash is washed away from the bare slopes during the first rainfall events of the season. The soils that are already low in nutrients, especially phosphorus, are further impoverished. Loss of nutrients and shortened fallows lead to lower crop yields. Shortened fallow favors herbaceous (grass) vegetative cover over woody cover. Herbaceous cover leads to increased frequency of fires which in turn favor increased herbaceous cover. The productivity of the most of the soils in the watersheds is declining through slash-and-burn agriculture and through the widespread practice of dry-season burning.

Bowal: These grasslands were probably once more productive, but have lost much of their fertility through fire and soil erosion. Small losses of soil and organic matter that would be insignificant on other soils are serious losses on these shallow soils. Their degradation has significantly increased rainfall runoff and decreased infiltration that replenishes local aquifers. There are not enough incentives, except near village springs and wells, for residents to invest in water conservation structures. Reduced burning or very early burning of the grass cover would reduce rainfall runoff and increase infiltration. *Bowal* soils are a major management problem for the Diaforé watershed and a minor problem for the Koundou watershed.

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Significant use in land use has been occurring over time. Using remote sensing techniques, Gilruth and Hutchinson ⁴ conducted a detailed land-use analysis of Diaforé watershed. They found that in 1953, 4 % of the Diaforé watershed was in active agricultural fields (slash and burn, and primary agriculture). By 1989, 12 % of the watershed was in active agriculture. Shifting agriculture is expanding and fallow rotation periods are decreasing. Permanent agriculture is being extended at increasing cost and diminishing returns. This expansion has predominately occurred on steep slopes and is unsustainable.

Gilruth and Hutchinson were unable to analyze the changes in use of riparian gallery forests, as these areas were too small to analyze with the given monitoring techniques. Such areas, however, have high value in terms of agricultural capability and biological diversity conservation. Therefore, they should receive priority attention in project inventories of natural resources and in management activities.

Contributing factors to deforestation are: (1) population increases which require the extensification of agriculture to supply the increased demand for food; (2) unsustainable agriculture and decreasing soil productivity that necessitate the clearing of additional forest land.

3.3.2 Strategic analysis

In this section, the Evaluation Team analyzes the appropriateness of the natural resources management interventions and strategies developed by the project. Project NRM interventions are weighed against two principal criteria:

- the extent to which they contribute to project goal and purpose of increasing agricultural production; and
- the extent to which they address the principal problems of sustainability of the land use systems in the watersheds.

Soil-fertility maintenance is a key constraint to both agricultural production and the sustainability of land use systems.

Project NRM interventions have concentrated on water management, soil and water conservation and agroforestry. More specifically, the Project has concentrated on water-point development (capped springs and wells), contour rock bunds for erosion control, private nursery development, tree planting on small areas directly above springs, on live fencing trials, woody forage trials and composting. The large majority of soil conservation and agroforestry work has been done on permanent *tapades* (home gardens).

⁴ Gilruth, P.T. and Hutchinson, C.F. 1990. Multisensor monitoring of deforestation in the Guinea Highlands of West Africa. Final Report, NASA Grant 1359. Arizona Remote Sensing Center, The University of Arizona, Tucson, 43 pp.

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Table 3 summarizes the strategies and technological approaches used for natural resource management activities.

The project's long-term strategy should be to: (1) reduce cultivation on the steep slopes, which are extensive in the three watersheds, and (2) promote the use of perennial crops on these steep soils by developing markets for forestry, horticulture, and livestock activities. The project's short-term strategy should be to reduce erosion on the most vulnerable and productive soils. Project personnel need to encourage long-term rental agreements for exterior fields and irrigated areas which increases the incentive of renters to invest in improved management. USAID should continue to encourage improvements of resource tenure and usufruct laws by the GOG and support LTC studies on resource tenure and usufruct reforms.

The greatest degradation of soils occurs during the first few rainfall events after forests and fallows are slashed and burned for cultivation. Farmers who are implementing slash-and-burn management should be priority targets for project extension, especially of contour structures. The project should continue to encourage reduced burning or early burning throughout the watersheds. Soil conservation interventions also directly conserve water the primary perceived needs of watershed communities.

Soil-fertility maintenance

The most critical NRM problem in the watersheds is unsustainable agriculture. This problem is centered on the inability to maintain soil fertility. Soil fertility maintenance requires that erosion be minimized and that soil organic matter and nutrient levels be

Table 3. Natural Resource Management: Strategies and Technological Approaches

STRATEGIES USED	TECHNOLOGICAL APPROACHES USED	OTHER TECHNOLOGICAL APPROACHES RECOMMENDED
Soil-fertility maintenance	Rock bunds Composting Agroforestry trials, with nitrogen-fixing species Alley-cropping trials	Phosphate fertilizers Night corals Reduce burning crop residues Very early, partial burning Improved fallow techniques with nitrogen-fixing species
Erosion control	Rock and earth bunds Contour hedgerows Stream bank plantings	Rock lines, contour plowing, Contour forage plantings, tied ridges Minimum tillage, mulching Diversion dikes, Check dams
Waterpoint development	Capping springs Improved wells Water delivery system	Improved hydrological & engineering design and attention to water purity
Water recharge management	Spring plantations, weeded, with firebreaks Rock bunds on recharge area	Improved fire & range management Deciduous trees or herbaceous plants around springs
Live fencing	Live fence supports, using exotic species intended for green manure	Indigenous species True live fences Greater use of traditional live fences
Private tree nurseries	Grafted fruit and forest species	
Natural forest management	Proposed co-management, including market development	Only proceed if long-term commitment
Forage trials	Agroforestry block planting in tapades	Contour plantings of herbaceous or woody forage species
Natural resource inventory	Rapid appraisals Visits other projects to inventory NRM practices	Training and use of aerial photos and maps More field visits to other projects
Community-level NRM management	Waterpoint development, spring plantings Rock bunds for water recharge Firebreaks	Fire and range management Forest management Management of communal village resources

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maintained. Increased agricultural production will require not just maintaining soil fertility at its presently very low levels, but in significantly increasing soil fertility.

The Evaluation Team does not believe that soil-fertility management has been given as much strategic importance as it deserves. The project has addressed soil fertility maintenance primarily through the extension of rock bunds for erosion control, through the extension of composting techniques and through selected agroforestry trials. Emphasis on contour-erosion control structures such as rock bunds is highly appropriate. Erosion control is a necessary, but not sufficient, condition for maintaining or improving soil fertility. Soil fertility can continue to decline even when there is no erosion. Extension of composting techniques is appropriate, but will provide no miracle cure. Composting can be labor intensive and has rarely gained wide acceptance in Africa. Composting will do little to replace key nutrients that are lost through crop harvest.

Given the importance of soil-fertility maintenance, the Evaluation Team had hoped to see a much wider range of trials of agroforestry species and techniques and agronomic techniques for soil-fertility maintenance. Some of the species used for fencing supports are expected to contribute nitrogen-rich green manure for the *tapades*. While the technique holds some promise, the limited production potential from the fences cannot be expected to have a large impact.

Two alley-cropping trials for soil fertility were begun in 1994 under contract with the Bareng Agricultural Research Center. The depleted soils of the two sites selected do not seem very appropriate. Alley cropping may be effective in maintaining the fertility of relatively fertile soils, but should not be expected to restore the fertility of badly depleted soils. Almost nothing has been done to test improved fallow techniques for soil-fertility restoration using nitrogen-fixing herbaceous and/or agroforestry species.

Soil analyses done by the project have shown that phosphate is severely deficient in much of the project area, as it is across much of Africa. In his September 1994 report, entitled "Soil/Water Program: Summary of a Program," Bob Chase presents data showing that over 50% of soils in the three watersheds are deficient in phosphate, with 51 % of the soils in Diaforé being strongly deficient. He states, "P deficiencies must be taken very seriously. If there is little P in the soil, it will be low in the plants, in manure and in compost,.." With continued cropping, phosphate commonly becomes depleted to the point where it becomes the principal limiting factor to production.

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Agriculture cannot be ecologically sustained over the long term without outside inputs of phosphate and certain other nutrients that are lost through continuous cropping. Phosphate deficiency can also limit the growth and effectiveness of agroforestry species. Nutrient replacement must be addressed. Commercial market gardening is the obvious place to start, because it is one of the only agricultural activities that can potentially pay a positive return on chemical fertilizer inputs.

Potentially important soil-fertility maintenance strategies that have received little attention from the project are night corals for cows (making it much more efficient to collect animal manures), efforts to discourage the burning of crop residues on exterior fields, and strategies for reducing the incidence of nutrient-depleting wildfires on fallow lands.

Stables and night corals for livestock

Livestock management strategies have an important impact on soil fertility, in terms of the distribution of animal manure. The project has conducted two demonstrations of covered stables in Dissa Watershed: manure from these stables is then added to compost piles. To the knowledge of the Evaluation Team, the project has not ever demonstrated the type of simple, fenced enclosures for corralling animals at night that were widely used before the First Republic. These corals provided a simple way to collect animal manure, which was then used to enrich the soil in the *tapades*.

It seems that there is still a head tax levied on animals, of 1000-2000 Guinean francs per cow and 500 GF for small stock, such as goats. If this is true, the project should carefully analyze the importance of this policy as a constraint to corralling livestock at night. If, indeed, the head tax is the principal reason farmers no longer corral their animals, then the head tax itself should be addressed as a policy constraint to the sustainability of agriculture.

The head tax may not be the problem. People may no longer corral their animals because predators are no longer common. It is certainly much easier to let the animals roam free at night than to gather them into a corral each evening. Another issue would be whether the social organization of grazing and herding has substantially shifted over time, and thus whether or not it might be feasible to regroup the cattle in fixed spots every evening. Do the cattle now graze further from the villages than they did formerly? Are they tended by herders, or do they wander around on their own?

Water point development/water recharge management

The project has put a great deal of effort into water point development in the form of spring capping and improved wells. While these activities are very highly appreciated by villagers, they have been viewed as relatively separate "entry point" activities needed to gain the good will of local villagers. Water point development should be promoted as one element of an integrated approach that includes watershed management of spring and well recharge areas and potable water and market garden development reliant on improved watershed management.

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Much effort has gone into the establishment of small plantations of exotic species around springs. In some cases, native woody vegetation had to be suppressed to create these plantations. The plantations must be laboriously weeded and protected with firebreaks. The overall value of these plantations appears questionable given the rather symbolic size of these plantations and what would appear to be the limited potential for extending this technique over significant portions of the water recharge area of the springs. Wood products that will be produced by the plantations are not generally in very short supply in the three watersheds.

Fire is almost certainly the principal land management tool that determines the condition of the water recharge areas of the springs and wells in the watersheds. An alternative strategy for improving the management of water recharge areas would be to develop improved fire management techniques. Very early fires only partially consume the grass and litter cover while preventing or greatly reducing the risk of mid to late season burns. A program of very early controlled burns could have the following effects:

- increased woody vegetative cover (very early burns have minimal effect on woody vegetation, whereas mid to late dry-season burns can kill or severely damage trees and shrubs);
- increased litter layer and increased soil organic matter that reduce erosion and increase water recharge; and
- decreased loss of soil nutrients.

Villagers were mobilized to construct rock bunds on the *bowal* recharge area for their spring in the village of Gueme in Diaforé Watershed. This appears to be an appropriate technique wherever villagers can be mobilized to undertake such an endeavor. It would be highly desirable if the project could quantify the impact of this intervention.

Live fencing

Tapades and market gardens must be fenced. Annual repairs of dead fences are very labor intensive, and labor is a constraint to agricultural intensification. Dead wood fences greatly increase termite populations that attack crop plants. Lack of fencing is a significant constraint to market gardening development. Live fencing can potentially address all of these constraints.

The project has devoted a great deal of effort to promote the planting of trees in fence lines to serve as living fence posts as supports for dead fencing materials. Nearly all of the trees promoted by the project are exotic species; some are being introduced into the watersheds for the first time. None of the trees planted have yet developed to the point where they can serve as fencing supports. It is intended that many of the fence row trees will eventually be routinely cut back for green manure and for branches that will be used as dead fencing materials to fill the gaps between the live trees.

'The type of fencing promoted by the project will certainly find a niche in farmers' production systems. It is too early to judge how successful the new techniques will be.

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The Evaluation Team feels that it would also be appropriate to promote true live fences that require little or no dead materials. It would also seem to be appropriate to promote or to improve on indigenous live-fencing techniques already developed in the Fouta Djallon. The Fouta has some of the greatest diversity of indigenous live fencing techniques found anywhere in Africa.

Private tree nurseries

Project support for private nursery development looks very encouraging for assuring future supplies of improved fruit tree varieties. Training of nurserymen in grafting techniques for improved fruit tree varieties has been very successful.

Natural forest management

The project proposes to develop village-based natural forest management of the Nialama Forest in Koundou Watershed and has conducted three background studies. The project should realize that developing socially, ecologically and economically sound natural forest management approaches is a complex undertaking. There have been many attempts in West Africa, and relatively few successes. The project should not have any illusions that sustainable co-management systems could be developed by the end of the current project. USAID and the GOG should make a clear, long term commitment to supporting NFM at Nialama if the project is to go forward with during the current phase of the project.

Many natural forest management projects have recently failed because of insufficient attention to the social aspects and lack of sufficient follow-up. This project would have an additional problem of developing markets for forest products so that there would be sufficient incentives to manage the forests. Markets for bamboo and *Pterocarpus erinaceus* exist and project activities can evaluate their potential importance in the co-management plan.

Forage trials

The agroforestry block planting forage trials in *tapades* Diaforé and Koundou do not look very promising. Forage plantings in Dissa have grown much more vigorously, but dry-season forage does not seem to be in very short supply in Dissa. Block plantings necessarily compete for crop space in the *tapades*. Contour plantings of herbaceous and/or agroforestry forage species for erosion control may have much greater potential.

Subsidies

In 1994, the project opted for the use of subsidies as a strategy for the extension of contour rock bunds in *tapades*. Over 20 km of bunds were put in Koundou Watershed with a subsidy of FG 30/meter. The subsidy has since been discontinued. The pros and cons of such a policy should have been thoroughly studied in advance by all the project partners and the policy should then have been clearly explained to villagers in the watersheds. A precedent has been set, and it is difficult to predict what will happen in

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Koundou in 1995. Given the project's funding levels, it will be difficult to explain to villagers why an FG 30 subsidy for rock bunds is being discontinued.

Tenure constraints

The existing resource tenure systems are very complex and do not provide secure use, access, or tenure rights to a large proportion of resource users. This current insecurity of resource tenure and usufruct is a major constraint for the project because it discourages the investment of many NRM interventions that the project is trying to extend. Project interventions and activities should be balanced so that the "resource-poor" can improve their education and skills and will not be marginalized as the "resource-rich" reap the long-term benefits from improved natural resource management. The project and the GOG together can help negotiate usufruct rights so that land borrowers are assured the benefits of their conservation efforts.

3.3.3 Technical analysis

Soil-fertility maintenance

Project-supported soil analyses indicate that phosphate is severely deficient in the project area. It is unrealistic to expect agroforestry, composting, and reduced burning to raise the concentration of phosphate to levels needed for sustainable agricultural production. Continuous harvesting of crops will eventually deplete soil phosphate unless it is applied as an amendment.

USAID has resisted the use of chemical fertilizers on the project, due to concerns about long-term economic sustainability of such inputs. This is one of the most difficult aspects of sustainability to address in remote areas, such as the project's watersheds, because transport costs make chemical fertilizers very expensive. Furthermore, in Guinea, such fertilizers are not always available in the market.

The Evaluation Team feels, therefore, that USAID should reconsider this fertilizer policy if agriculture is to be sustained and intensified. The Evaluation Team does not suggest creating a subsidized chemical fertilizer program, but does believe that the project should subsidize on-farm trials of phosphate fertilizers.

The project should support the introduction of phosphate fertilizer to those farmers who are practicing improved soil management techniques. Soil conservation is a prerequisite for soil-fertility improvement, which is necessary to increase yields in the project watersheds without increasing the area cultivated. The deficiency of soil phosphate limits the benefits of agroforestry (especially with regards to nitrogen fixation) and composting.

Demonstrations and field trials of phosphate fertilizer to determine yield increases and other benefits should be conducted. The project should provide enough fertilizer to conduct applied research on enough areas and with enough farmers so that meaningful results can be obtained. The sites and farming systems where fertilizer is applied will be

diverse and will produce a very high level of statistical variability. Increasing the sample size, i.e. number of sites and farmers, is the only practical way of extracting statistically significant as well as meaningful results. Then the project can analyze the economics of the different production systems and then in turn allow the project to determine what types of production agriculture are sustainable for each watershed and under what conditions (e.g., improved markets for fertilizer used to determine benefit of improved roads).

Limiting the watershed residents to the organic option of soil-fertility maintenance (at this point in time) is a political decision, not an economic one. With production agriculture purchased inputs (e.g., chemical fertilizer) become an important factor compared to subsistence agriculture.

The project should encourage the use of night parks (corals) for livestock. Animal manure collection from night parks for soil amendments is a means of efficiently and effectively concentrating plant nutrients from all over the watershed by livestock grazing and foraging. The collected nutrients in the manure applied to the most valuable crops help improve soil fertility, one of the watershed's biggest constraints. (Night corals were traditionally used in the Fouta, but this practice was discontinued during the First Republic, as farmers tried to avoid having their cattle counted and taxed.)

Improved fallows of nitrogen-fixing woody and herbaceous species should be tested as a means of restoring soil fertility. *Tephrosia vogelli*, other *Tephrosia* spp. and *Crotellaria* spp. should be tried in particular. Trials should be limited to species that can be direct seeded effectively. Direct seeding should be done along with the last crop grown before fallowing. The fallow crop should be seeded as early as possible without interfering with the agricultural crop development. This is often best done after the last weeding. Woody species may be seeded at an approximately 20 cm spacing.

Soil and water conservation

Most of the types of interventions selected by the project are appropriate but many need further development to increase replicability and sustainability, such as: (1) refinement of site location methodology (e.g., using local land classification system to better match interventions to appropriate sites); (2) reduction of labor requirements (e.g., initial extension of smaller rock lines rather than the larger rock walls); (3) increased integration of appropriate vegetation with structures (e.g., introduction of contour lines of crop litter and stalks and planting of perennial herbaceous and shrub species on the contour).

Soil and water conservation interventions need more refinement. Contour earthen dikes (or bunds), contour plantings, and contour rock bands, walls, or dikes effectively reduce erosion and increase aquifer recharge and are appropriate interventions for agricultural fields with slopes greater than 5%. Labor and material constraints determine the type of contour that is most appropriate. The extension of rock walls (two or more rocks high), instead of rock lines (one rock high) along the contour, may require too high of an initial

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labor demand for the intervention and, in turn, discourage its use. It is important to assess why such practices, introduced in the past, have been abandoned by local farmers.

Failure of some structures to follow the contour, especially for earthen dikes (bunds), is causing some gully erosion. Regularly spaced containment arms constructed up slope from the contour structures can help reduce the risk of gully erosion. They should be associated with other cultivation practices (e.g., such as contour plowing, tie ridges, minimum tillage, and mulching) to further reduce soil erosion so that agriculture is sustainable. Some rock bunds on sloping permanent fields appear very encouraging with up to 20 cm of soil accumulation in two years. Contour structures should be promoted on moderately steep fields and *tapades* but sustainable agriculture becomes increasingly problematic for slopes greater than 20%. These areas should ultimately be converted to perennial crops (e.g., fruit trees and pigeon peas) or returned to forests or pasture.

The project has relied strongly on rock bunds to date. Very little has been done with contour bands of perennial vegetation, especially of forage species such as Guatemala grass or *Stylosanthes*. Contour bands of these and other species should be tested and extended for erosion control. Perennial vegetation bands may be the only workable technique where rocks are lacking or are present in insufficient quantity for bund or wall construction. Bands of vegetation also have the advantage of allowing water to filter through even when they are not established perfectly on the contour. Once established, hardy species, like Guatemala species, should be able to withstand dry-season grazing without protection.

Contour rock lines (41 km reported) and contour planting should continue to be a priority intervention of the project. They directly reduce erosion and identify the contour so that companion interventions are more easily applied (e.g., contour plowing and tied ridges). Mulching and minimum tillage should receive more emphasis that the project is presently extending. Diversion dikes (7 sites) are needed but the projects WMU technicians need training to properly construct them. The project should continue with it extension of check dams to reduce gully erosion. The project has been doing a good job in stream bank reforestation and protection activities and should continue.

Soil and water conservation measures that increase water infiltration may have very positive effects on crop yields during drought years. The project areas received very good rainfall in 1994. It may require a drought year of moisture stress before risk-averse farmers begin to better realize the benefits of these measures. A drought could provide a major stimulus for extension of these techniques.

The composting techniques introduced are labor intensive and show less potential for wide adoption. Mulching is a very effective intervention for reducing erosion and evaporation. This intervention should play a more expanded role in the projects strategy and should be especially encouraged on the steeper slopes.

It is unrealistic to expect contour structures to capture and hold runoff from the more intense storms. Diversion dikes can effectively intercept the excessive runoff and divert it

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to natural drainage ways. Diversion dikes are needed in the project area but they require a higher level of expertise that the technicians presently possess. Although the diversion structures that the team visited were intact and functional, the technician designed the structures without considering many of the hydraulic factors necessary for proper design (e.g., changing dike height and slope as the cumulative runoff area increases to accommodate the flow but avoid gulying). If by chance they were badly designed then they pose a risk of causing greater damage than if nothing was done. STTA in soil and water conservation is needed to train the technician and farmers appropriate methods of designing and constructing diversion dikes.

Check dams can provide effective erosion control in drainage ways, are appropriate measures for the project to pursue, and are needed in the watersheds. They can be constructed with local materials (rock and/or vegetation) and can be replicable and sustainable. The check dams visited by the team were technically appropriate. STTA is needed to train project personnel in site selection and construction technique so they in turn can train the farmers.

Waterpoint development and water-recharge management

Some of the capped springs were so poorly designed that some have only marginal benefits to the communities. A basic understanding in subsurface hydrology is lacking by the designers: in order for some structures to function, water would have to flow up hill. Holes in some of the capped spring have been deliberately chiseled at their base to compensate for the design flaws. This modification compromises the potential health benefit of the intervention, as open water sources can be easily contaminated. Also, hydrologic "piping" underneath the structures (the spring seeks a new outlet beside the structure due to a design flaw that attempted to raise the water level within the structure above its natural level) should be another design concern. The piping under the structure at Hafia, Dalaba may eventually cause its complete failure. Its repair will require removal, redesign, and replacement.

The construction of water delivery systems can be effective as community organizing and empowerment activities if construction and payment are the responsibility the villagers. The active participation and monitoring by villagers would encourage proper use of funds by contractors. The project has supported the construction of several delivery systems which will provide good demonstrations. The hydrology/civil engineer and soil and water conservation STTA, as well as LTTA, need to improve the design of storage and delivery systems to match the consumptive needs of the villagers and irrigated gardens. Land tenure and usufruct issues should be addressed before a system's construction if it will be used for irrigation.

Future water point development should require that the beneficiaries, both men and women, improve the aquifer recharge area above the spring or well. Companion activities could include reduced burning of forest and fields, early burning if required, construction of rock lines and vegetated strips along the contour in agricultural fields and areas of high rainfall runoff (e.g., *bowal*).

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Efforts should also be made to address water purity issues. In Koundou watershed, some village management committees use their waterpoint maintenance funds to purchase bleach, for a monthly disinfecting of their wells. In Dissa watershed, in contrast, the project staff told the Evaluation Team that they had never heard of this idea.

There is a technical issue over the advisability of planting evergreen trees in close proximity to springs. The project's soil and water conservation advisor made spring flow measurements that showed reduced daytime flow from springs that were surrounded by evergreen trees. He postulated that daytime evapotranspiration from trees with whose roots are drawing on water that feeds the springs is having the perverse effect of reducing spring flow. This seems highly plausible but the project continues to promote the planting of evergreen species in close proximity to the springs. Deciduous trees that lose their leaves in the dry season or shallow-rooted herbaceous vegetation that dies in the dry season might be much more appropriate. This technical issue has not been properly dealt with by the project.

Live fencing

Live fencing is a appropriate intervention for the project area because of its many economic and environmental benefits. The project should place a greater effort on fully live fences (not just live fencing supports) and on demonstrating and improving upon traditional fencing techniques already developed in different areas of the Fouta Djallon. As fencing is used primarily around *tapades* and dry-season market gardens, live fencing would particularly benefit women, as they would no longer have to find male labor to help them build fences.

Use of existing aerial photographs and maps

The project has not used existing aerial photographs, and 1:5,000 topographic maps for evaluation of the resource base and for project planning although these documents are now available at each of the WMUs. The topographic maps have a five-meter contour interval and show every dwelling and *tapade* fence that existed at the time the maps were made. The project should make full use of these invaluable documents. Training in their use should be programmed as needed. The photographs and maps should be extremely useful for assessing dry-season market gardening potential.

3.3.4 Progress achievements

The natural resources conservation and management component of the project directly concerns Outputs 1 and 3 of the project's logical framework.

Output 1. Increased watershed specific knowledge and information base among at least three watershed communities for effective management of natural resources.

OVI 1a Inventory of natural resources in the watersheds.

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No natural resource inventory in the classic sense, involving thematic maps and quantification of the resources, has been done. (As stated in 2.2.3., the Evaluation Team does not think such a general inventory is appropriate except where specific needs arise.)

OVI 1b. Assessment of rate of degradation of key resources (soil, water, forests).

This has not been done in a systematic way and needs to be done. As stated in 2.2.3., the Evaluation Team feels it would be more appropriate to restate the indicator as an assessment of the sustainability of the land use systems in the watersheds. The Team feels that such an assessment should be done systematically by watershed, even if the analysis is largely subjective. This analysis should serve as a basis for refining overall strategies, for prioritizing project interventions and for a better geographical focus.

OVI 1c. Inventory of NRM techniques and strategies.

As stated in 2.2.3., the meaning of this OVI is not at all clear, and the Team cannot evaluate properly progress made. Other pilot watershed projects were visited and the rural appraisals collected some information from the watersheds, but no formal "inventory" report seems to have been done. The project could benefit from a more stronger program of field visits and exchange of lessons learned with other projects.

OVI 1d. Inventory of improved practices applicable to watersheds.

This OVI is also unclear. Does it mean an "inventory" of NRM techniques throughout the world that may be applicable in the watersheds?

OVI 1e. Knowledge of (b) and (d) among resource users.

Watershed populations seem to be very much aware of the degradation of their resources. They know that soil fertility and crop yields are declining and that springs have dried up or have decreased in flow. Somewhat to the Evaluation Team's surprise, some villagers even understand the correlation between spring flow and water recharge areas that may be fairly distant. Villagers also seem to have a substantially increased knowledge of those new practices that have been demonstrated and/or extended by the project. Most of them have quite high visibility. Quantification of the increase in knowledge of resource users has not been done, and would probably be fairly difficult.

Output 3. Increased adoption of NRM technologies in at least three watersheds, e.g., soil conservation, water control, planting of trees and windbreaks, etc.

OVI 3a. Increased number of farmers adopting improved NRM practices.

The key word is adoption. The Evaluation Team believes that adoption of a NRM practices implies that the farmers will continue the practice on their own after the project is completed. Adoption must be distinguished from participation. Large numbers of farmers are participating in the testing of NRM practices extended by the project. The

project has done a good job of quantifying these activities. The number of kilometers of rock bunds installed and of live fences planted are monitored closely. But adoption of NRM practices is very difficult to judge after only two years. It is clearly too early to judge the adoption of agroforestry techniques that require several years to produce benefits. The adoption of soil and water conservation measure may take less time. The physical effects of rock bunds in some *tapade* gardens is quite dramatic with up to 20 cm of soil accumulation after two years. This is encouraging, and one can hope that farmers will see and appreciate the benefits. One should look for signs of farmer-to-farmer extension of practices extended.

OVI 3b. Increased number of community level NRM practices adopted.

Most community level activities have concerned water point development through spring capping and improved wells for potable water and market garden irrigation, which benefits about 60 % of the populations in the watersheds. Community management of their land resources has not been as strongly developed. Many communities have been mobilized to plant and care for small plantations around springs. There has been some community management of living fire breaks around villages and on rock bunds for improved water recharge around one spring. In general, community management of village lands to date only affects a small fraction of the total land resources of the communities. As with the farmer-level NRM practices, it very difficult to judge the "adoption" of community-level NRM.

3.4 Training

The training component of the project encompasses training both for GOG personnel and project staff, and also for the watershed residents. The training of the villagers is reviewed under Section 3.1.2, in a discussion of extension, training, technology transfer and information dissemination.

Table 4 summarizes the types of training that have been conducted by the project, and training needs. The Evaluation Team believes that, insofar as is possible, the project's short-term consultants should be involved not only in providing expertise for accomplishing a specific scope of work, but also should be involved in training of local staff, watershed residents, and other relevant project partners.

3.4.1 Training of Guinean government personnel and project staff

The quality of education and training under the First Republic deteriorated very badly and many of the technical staff assigned to the WMUs need additional training in many areas. Virtually all extension is done by the WMU staff. Their level of training and motivation is therefore critical to project success.

The project should have a training plan based upon a training needs assessment. Such an assessment should be based on a comparison of what each staff member is expected to be

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able to do (their scope of work) versus their level of training, experience and competence. These plans must be developed with the active participation of the project staff at all levels. The technical assistance contractor requested STTA early in the project to conduct a training needs assessment and to develop a training plan. USAID denied the request. The TA team has developed a very rudimentary training plan, without conducting a formal training needs assessment and without full participation of the watershed staff. The technical advisors have been actively involved in seeking regional and in-country training opportunities.

The Project has been promoting training for its staff, through in-service (on-the-job) training of technicians by the technical advisors, as well as workshops, study tours, and short courses in other African countries. The technical assistance contractor, with the assistance of USAID (particularly the HRDA project staff), has been responsible for arranging for long-term training. Six DNFF staff members were sent to the United States for long-term English language and M.Sc. studies. The only female candidate was terminated from the program due to pregnancy. None of the five remaining M.Sc. candidates is expected to return to Guinea before the end of the project.

Most of the short-term training courses have been judged to be worthwhile by the participants. The WMU staff were nearly unanimous, however, in requesting longer training courses, i.e., 45 days to 3 months. (According to USAID education project staff, virtually all Guinean training participants always express the desire for longer training sessions. Such training tends to be very intensive, so participants feel that they have inadequate time to absorb the material.) The PMU staff, in contrast, are concerned about getting the field work done, so they are reluctant to send WMU staff off for that length of time. The technical advisors, therefore, prefer to stress on-job-training and local workshops.

WMU staff claimed that some short-term training courses have been chosen at the last moment, without adequate prior consultation with either the trainee or the watershed directors. Virtually all who participated in the training in regenerative (organic) agriculture given by Rodale in Senegal felt that the level of this training was too basic, and that they benefitted very little from it.

Table 4. Overall Summary of Training Provided and Training Needed

Trainees	Training Provided	Training Needed		
GOG personnel (outside of project staff)	5 M.Sc. candidates in U.S.; 2 Guètoya staff to conference in Senegal; (land tenure training & study tours)	2		
Project staff	ICRAF; Rodale; Centre Horticole; study tour to Benin; Gambia NRM conference; study tours to other projects in the Fouta; training in RRA and land tenure issues; functional literacy training; feasibility studies; on-the-job training from advisors concerning gender issues, enterprise development, agroforestry, soil and water conservation, project planning and management skills	Study tours to visit other project watersheds; building diversion dikes; soil and water conservation; livestock production, range and fire ecology; land use planning; aerial photo interpretation; agroforestry; extension approaches, participatory techniques, community organization, PRA; basic business skills (credit, feasibility and market studies, accounting); market gardening technical package; applied agronomic research; riding motorcycles; computer skills (for secretaries and others); monitoring of environmental impacts; training in household surveys (M&E); on-the-job training in analysis of indicators monitored and evaluation		
Watershed residents	Study tour to Benin; producer groups - training in enterprise management, technical interventions; NGOs provided training in animal traction; PCVs arranged training of village midwives	Literacy, numeracy, simple accounting, use of credit; enterprise management skills; safe fertilizer use; technical interventions in NRM, agriculture and enterprises; participatory planning, management, monitoring and evaluation; participatory village-level resource management plans; environmental education		
Peace Corps volunteers	NRM and community enterprise; French; limited training in Pular or Sousou	NRM and community enterprise French language training More local language training		
Other	Training provided to staff of other organizations through project workshops on NRM, gender issues	2 Training to develop skills of NGOs for participatory extension work with villagers		

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The project has already worked with some local and international NGOs, primarily in the area of training for staff and villagers. Two national NGOs with good reputations that have offices in Labé are the Guinean Union of Volunteers for Development (UGVD) and the African Training Center for Development (Centre Africain de Formation pour le Développement, CENEFOD). UGVD staff members visited the project's three watersheds in 1993, and prepared a report on possible areas of collaboration. Since then, UGVD has worked with the project to provide training in animal traction. Two other NGOs, ACT and Centre de Formation pour l'Elevage (CEEL), have also assisted with training in this area.

While the project is, by definition, a temporary structure, indigenous NGOs will continue to operate in Guinea. Efforts to use qualified NGOs should be encouraged, especially for rural *animation*, extension and training. The organizations might be able to play an increasing role in these areas in the last two years of the existing project, and in any subsequent phases or extensions of the project.

For the WMU staff, the women and men have received comparable training opportunities. A recent study tour to Benin for project staff and villagers, half the participants were women. The major difference, however, has occurred with international training opportunities. For English language training and M.Sc. programs in the United States, only one of six candidates proposed by the DNFF was a woman.

Early in 1995, the Project sent three staff members (two women, one man) and six watershed leaders (three women, three men) on a study tour to a natural resources management tour in Benin. The staff members expressed differing opinions as to the usefulness of this trip for the villagers, but all felt that it was worthwhile for the technicians. As a general rule, however, the Evaluation Team feels that villagers generally benefit more from study tours where the host villagers and visiting villagers can speak the same language, and thus share their experiences more directly.

Poor motivation of WMU staff has limited the numbers of replication of the interventions that the project has introduced. Watershed staff needs more motivation and training. The lack of motivation by the staff is a large constraint to the project. There are some highly motivated and capable people within the WMUs; they should be allowed to flourish through a performance based-incentive system. Training opportunities could be one of the key incentives of such a system.

Training Needs

All watershed technicians would benefit from further training in a wide variety of extension approaches and techniques, to encourage them to adopt more of a facilitating role vis-a-vis the watershed residents (rather than a more classical "training and visit" approach or telling the farmers what to do). More attention needs to be given to building upon indigenous knowledge and expertise, and encouraging farmer experimentation. Training is also needed in participatory planning, management, monitoring and evaluation techniques, so that staff can help watershed residents better plan and manage their

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resources. The head women's extension advisor could take the lead role in organizing such training for project staff.

Training for Community Enterprise Development

The CED watershed contract staff need considerable training in basic business skills before being in a position to pass these along to area business people. This training includes basic accounting, feasibility studies, market studies, and production and conservation techniques being implemented by the project. Some of this training is already being provided on-the-job by the CED technical advisor.

In two of the three basins (the exception being Diaforé), the promotion of new businesses and the strengthening of existing businesses is inadequate. Staff in Koundou and Dissa must either improve their performance or be replaced with people with appropriate training and proven business skills. If the same staff is to be retained, more on-the-job and other training in business skills is needed.

Since the women's extension agents are responsible for the promotion of women's businesses and some of these activities are of marginal or questionable profitability, additional training and/or backstopping in feasibility and market studies might be useful. Furthermore, since women have no access whatsoever to credit through the project, the women extension agents staff could benefit from training in credit. Since women extension agents are promoting and supporting market gardening, they need training in agronomy, specifically in the package of production technologies and soil and water conservation measures being introduced by the project. This training will help them in integrating their work with the overall objectives of the project.

Non-CED staff should have some minimal training in enterprise recognition in business, so that people wanting to set up new enterprises and to expand existing enterprises can be referred to appropriate project staff for assistance.

Training in Natural Resource Management/Sustainable Land Use

The project has sponsored short-term training in agroforestry (15 person-weeks at ICRAF in Kenya), natural forest management (Benin), regenerative agriculture (Rodale in Senegal), and informal training that occurs between LTTAs and the watershed technicians during the LTTA watershed visits. Training of nurserymen in grafting techniques for improved fruit tree varieties has been very successful.

Continued training is needed, especially in site selection, design and engineering of soil and water conservation structures. Diversion dikes (7 sites) are needed but the WMU technicians need training to properly construct them. More training is needed for the proper hydrological and civil engineering design for capping springs.

The project has not used existing aerial photographs, and 1:5,000 topographic maps for evaluation of the resource base and for project planning, although these documents are now available at each WMU. The project should make full use of these invaluable documents. Training in their use should be programmed as needed.

3.4.2 Progress achievements

Output 5a. Approximately 30 GOG personnel and watershed community leaders trained in NRM.

Although the output does not distinguish between a one-day workshop and a M.Sc. degree in the U.S., on a simplistic level, the project has already greatly exceeded this output.

OVI 5a. Number of GOG personnel training annually.

The GOG of Guinea has five candidates that have completed English language training and currently studying for M.Sc. in the United States. A sixth candidate (the only woman) went to the U.S. for language training, but was dropped from the program due to pregnancy. These candidates are not expected to complete their programs in time to return to work with the project.

In terms of short-term training, the project's 1994 annual report noted that over 700 person-days of training with over 150 watershed and GOG personnel. Eleven GOG watershed technicians received regional (African) training in issues relating to NRM management, training with Rodale on organic farming in Senegal, accounting for vegetable farming and plant protection.

The latest USAID Project Implementation Report (for October 1994 to March 1995) reports on the total training to date for the project. For Government of Guinea personnel, in-country training has been provided to 119 men and 12 women, short-term training to 22 men and 5 women, and long-term training to 5 men. It has been difficult to identify more women for training, as few women work in government civil service who have specializations in natural resource management.

Overall progress in the area of short and long-term training for WMU and government staff can be considered to be fairly good. Greater efforts, however, are needed to provide more training to women. As indicated above, the Evaluation Team does feel that additional training is required in particular areas.

3.5 Applied Agricultural and Agroforestry Research

One of the project's major components includes applied research, which specifically refers to applied agricultural and agroforestry research to be undertaken by Guinean research organizations. Other types of applied research and assessment activities are included under other project components, such as field trials (under Natural Resources Management), market studies (under Enterprise Development and Policy Studies), studies on land tenure, forestry and environmental policies, gender issues, market access and sustainability (under Policy Analysis), and progress and impact monitoring (Monitoring and Evaluation).

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3.5.1 Research conducted

The organization of applied agricultural and agroforestry research activities among the project components was not clearly specified in the project paper. The Applied Research component was designed to consist of research to be undertaken by the Agricultural Research Center at Bareng. The project has, however, also worked with the Foulaya Research Station and the Plant Protection Laboratory.

Disruptions in PL-480 funding managed by the GOG severely disrupted applied research undertaken by Bareng and Foulaya Research Stations in 1994. Several of research trials begun were completely lost. This problem should be resolved in 1995, as research contracts will be made directly with the institutional contractor providing technical assistance.

Concerns have been expressed to the team relating to the type of research chosen, lack of sufficient follow-up, and late reporting of progress and results. For example, researchers at the Bareng do not believe alley cropping will be an extendible technique but yet they are conducting trials in the watersheds. Site selection for the alley cropping trials and explanation of their goals to the farmers could be greatly improved.

Other project activities can be considered to be contributing to the applied research objectives. The entire agroforestry program must be viewed as a type of applied research, as the project is introducing new species into agro-ecological conditions where they have never before been tested.

In comparison with the above studies, the applied research conducted by the agroforestry LTТА is much more valuable. Studies on seed germination requirement may prove very useful for direct seeding interventions. Project-related research is being conducted on maize, sweet potatoes, potatoes, groundnuts (peanuts), and forage plant. On-farm demonstrations that were conducted by the project seemed more relevant to farmers needs and occur on more representative sites. Nevertheless, follow-up by watershed technicians needs improvement.

In Diaforé, Bareng carried out research on potatoes which was successful enough for farmers to be convinced to grow potatoes the following year (1994-95) despite the failure of Bareng to provide a report on their trial. While the research is certainly appropriate, it is difficult to judge its quality since reports had not been provided as of the time the team visited the watersheds. In Diaforé, their contact with enterprise staff was non-existent, although the team was told that they did interact with staff at Koundou. Applied research should not be carried out in a vacuum but when done in conjunction with project staff (and interested farmers) can have a major extension and training role, much needed in the project. It is worth noting that in Diaforé where farmers observed Bareng's trials considerable interest was generated in potato production.

Project staff at Diaforé did some trials of their own using fertilizer on one half of each onion bed in one gardening group and the other half as a control with no chemical

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fertilizer. However, in other areas project staff were instructed not to use fertilizer and so none was used. In Koundou where this was the case, the Peace Corps volunteer working with one women's gardening group proposed doing a similar trial with compost (half of each plot with, half without) but was ordered not to do so by WMU staff. Particularly in a pilot project like this one, innovative behavior should be encouraged and as many trials as possible should be held. Even trials which apparently "fail," such as the four places where garlic was tried in gardens where onions was growing, provide needed information to both farmers and people.

Chemonics should be able to search out other organizations or individuals for applied research and not be limited to those identified in the Project Paper. The applied research needs should come from farmers, WMU and PMU staff and others concerned. They should be judged against project purpose, outputs and strategies. USAID should be aware that agroforestry can be a complicated integration of agricultural goals. It is not "off-the-shelf" technology and the LTTA should be allowed to be an active participant in the projects agroforestry applied research program.

In order to continue Bareng Agricultural Research Station's relationship with the project, Bareng needs to demonstrate professional follow-up, timely reporting, and academic rigor. Although Bareng began research trials for the project in 1993, they have been slow to provide research reports on their findings. In late April 1995, the Evaluation Team was shown research reports when they visited Bareng, but these reports had not yet been sent to the project.

3.5.2 Progress achievements

The logical framework did not contain specific outputs or indicators relating to applied research. Given the major loss of research undertaken in 1994 and the apparently poor integration of applied research into the project, the project can be said to have made only fair progress to date on this project component.

3.6 Policy Analysis

The project deals with policy analysis in four areas: land tenure and ownership, gender issues, access to outside markets, and sustainability of natural resource management programs. To date, the major policy work has concerned land tenure issues. The original project budget allocated US \$ 0.5 million for policy studies, which has since been increased to US \$ 1.3 million.

3.6.1 Land tenure

The GNRM Project has addressed land tenure issues on two levels -- as policy issues, and also through the introduction of techniques to facilitate project interventions in the three pilot watersheds. Land tenure issues have been addressed through the work of the Land Tenure Center.

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The Land Tenure Center has conducted case studies in the Fouta Djallon, both within the pilot watersheds and elsewhere. This work involved research in the 3 pilot watersheds, examining tenure relationships, resource management practices, tree tenure, water rights and grazing rights. The research used Rapid Rural Appraisal (RRA) methodologies, with a trainer who co-authored French-language guidelines on this approach (originally for use in Senegal). The LTC Project Director was assisted in this work by two Guinean research associates, as well as a few of the watershed technicians. Two of the PMU technical advisors also attended some of the training discussions, but did not participate in the field work. Four reports have been prepared on the three watersheds, of which three have been translated.

This work has led to the introduction of innovative land use contracts, to provide clearly delineated tenure rights to market gardening groups. These contracts have been negotiated for medium-term periods, such as five to ten years. They have been especially valuable in assisting women in gaining access to land.

The watershed staff mentioned how they have greatly valued these tools, the RRA methodology and the land contracts, which they learned from their work with LTC. Although the watershed technicians mention tenure issues as a constraint for their work, they did not discuss other ways in which this issue might be approached.

LTC has provided short-term consultants for two studies related to watershed activities. One study examined possible financial returns to investments for Diaforé and Dissa watersheds. Another LTC study investigated possibilities for co-management, by local residents and the state, of the classified Nialama Forest, which occupies 60 percent of Koundou watershed. [Other work on national environmental and forest policy, however, is being handled by short-term technical assistance provided through the contractor responsible for the three pilot watersheds.]

Subsequently, LTC prepared a proposal to extend their work further, to conduct case studies in all four regions of Guinea, and work to further policy dialogue on land tenure issues. In 1992, the Government of Guinea had adopted a new Land Code, which emphasized urban and commercial concerns but did not recognize customary land tenure patterns.

LTC proposed to undertake the case studies with a national interministerial committee (*comité de suivi*) and facilitate policy dialogue work. This process will support development of the *textes d'application*, whereby the national land code can be interpreted and implemented, with allowances made for regional variations in customary tenure. In the long run, when national policy reform is achieved, the *textes d'application* will have important impacts on the possible interventions that could be carried out in the watersheds.

The LTC contract has covered a series of regional workshops, to present and discuss the implications of the case studies. Later this year, LTC will organize both an international and a national conference on land tenure issues. They also have organized study tours for

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members of the interministerial committee to neighboring West African countries to examine land tenure issues. The general consensus is that these activities have been well conducted and worthwhile. This ongoing national-level policy work should ultimately have a significant impact on land use and resource management throughout the country.

The land tenure studies were originally perceived to be a minor component in the overall project, with limited funding. LTC is currently preparing a request for an expansion of its funding. USAID has increased funding for the policy studies to a level of US \$ 1.3 million.

The Evaluation Team has examined some of the documentation generated from the Land Tenure Center's research efforts. The research seems well conducted and well documented. The major concern, however, is to what extent it can or will be used by the field staff working in the three watersheds. The report on Dissa watershed, for example, describes in great detail the complexities and intricacies of land tenure patterns among the Sousou, Fulbé and Baleebé, variations from one village to another, and possible ways in which project interventions might exacerbate, rather than ease, conflicts over land rights.

From the perspective of the Evaluation Team, thus, it seems that more work is needed to link the research findings on land tenure with practical management steps that can be promoted by project field staff. For example, how can work be done with land tenure patterns, to encourage land owners or land borrowers to invest in long-term production and resource management activities, such as fire management and soil conservation? This is especially needed for the exterior fields, where most of the environmental degradation is occurring and where there is the least incentive for investment. (The project could then monitor and test these agreements by helping the borrowers to add value to the land. If the landowner breaks the contract, to reclaim the land, then the project may have to consider other methods to encourage investment in natural resources.) It would also be valuable for the project to seek ways to encourage longer-term investments in market gardening. If women can be assisted to gain more secure tenure or use rights, then they may be able to plant trees for live fencing and mulch, which will contribute to improved natural resource management.

Other issues would also benefit from increased collaboration between the watershed staff and the land tenure staff. As the watershed staff conduct their extension work with villagers, will they be able to educate and inform them of changes in national land policies? Would the watershed staff be able to get further research assistance from LTC, to help villagers develop village-level resource management plans for *terroirs villageois*?

The Land Tenure Center staff have expressed willingness to consider possible future collaboration with the project on watershed activities. The LTC Project Director, however, is fully occupied, however, until March 1996 with the national-level policy work. It may be possible for Guineans trained by LTC to provide the watershed staff with such assistance.

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Within the area of land tenure and management, policy studies were also proposed for forestry and environmental policies. In 1994, a short-term consultant examined environmental issues, within the context of the National Environmental Action Plan. In 1995 the technical assistance contract proposes to hire a short-term consultant to examine forest policies. As the Land Tenure Center has already done work on forest policy with respect to Nialama Forest, and elsewhere in Africa, it seems that it would be more appropriate for LTC to provide technical assistance in this area.

3.6.2 Other policy studies

With respect to the three other policy issues, limited work has been done. The project has undertaken some studies and workshops, which are intended to contribute to policy dialogue. To promote discussion of gender issues, the project sponsored a workshop on women's activities, held in Labé in October 1994. Market studies have been conducted, in the course of the community enterprise development activities. A short-term consultant for marketing analysis has been proposed for 1995. The project sponsored a conference on natural resource management issues in Labé in February 1994, which was considered to contribute to policy dialogue concerning issues of sustainability.

Many policy constraints that existed under the First Republic had been removed by the time that the project started. The project, however, is affected by national pricing of veterinary services. One project intervention is upgrading the quality of the local poultry population by introducing improved roosters (Isa Brown variety). To make this intervention successful and sustainable, vaccination against New Castle disease is necessary. The price of vaccinations is set by the veterinary authorities at GF 100, which is insufficient to cover costs where small numbers of vaccinations have to be provided over a large area. Some higher figure is necessary if project-trained paraveterinarians are to make a modest living and stay in business.

Another remaining policy constraint is the head tax on livestock. While the government has repealed the *normes* that existed under the First Republic, many CRDs have imposed taxes on livestock. Such a policy undoubtedly continues to discourage the use of night parks.

These policy matters should be discussed by USAID with the Government of Guinea.

3.6.3 Progress achievements

Output 6. Design and adoption of policies among GOG policy makers and planners on major issues and constraints affecting sustainable use of natural resources leading to an improved policy formulation process.

OVI 6a. Number of policy constraints identified.

Although the project paper identified a number of areas for policy analysis, such as land use and tenure (including forestry and environmental), gender issues, access to outside

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markets, and the sustainability on natural resources use, the project has identified few other policy constraints. USAID's policy on pesticide use, for example, was considered a constraint for the project, as special permission had to be obtained to treat termite mounds with pesticide.

With respect to gender issues, a major factor identified as constraining women's productivity is their workload. Therefore, decisions that promote extension of labor-saving technologies could have a major impact. This issue, however, does not directly relate to national policies. A policy area with significant gender issues is that of land tenure.

In a study done on co-management possibilities for Nialama Forest, a LTC-supported forest policy specialist identified problems with current GOG forest policies. Although Guinea's Tropical Forestry Action Plan encourages more active popular participation in forest management, actual policies for co-management are not yet formulated. Furthermore, in 1994, the GOG issued an eviction order pertaining to all illegal occupants of classified domain. Although this order was targeted at urban problems around Conakry, it includes all classified forests throughout the country. Such a policy is not conducive to more participatory forest management.

The Nialama study also noted that the lowest level of government structure currently authorized by the GOG to enter into contract agreements is the rural development committees (CRDs), which operates on the level of the Sous-Prefecture. Therefore, it is unclear what authority, if any, the State would grant to the *comités de gestion* working at the village level with the project.

Studies undertaken by the Land Tenure Center have examined land tenure questions in great detail. A study undertaken for Dissa watershed, for example, was based upon six months of field work. Identified constraints are being addressed through the ongoing national process to develop *textes d'application* for the 1992 Land Code, to recognize regional customary land tenure practices.

OVI 6b. Number of studies/analysis on identified constraints completed.

In the initial work with the GNRMP, the Land Tenure Center conducted studies in each of the three pilot watersheds. Subsequently, LTC has been engaged in two case studies in each of four regions of Guinea: those for Upper and Middle Guinea have been completed, and the Lower Coast studies are currently in progress. LTC also sponsored the study concerning co-management options for the Nialama Forest in Koundou Watershed.

Other policy-related studies conducted under the project's auspices include work done on environmental policy (a short-term consultancy in 1994), and project staff studies of women's time use. Short-term consultancies have been proposed for 1995, to examine forest policy and access to outside markets. No particular studies have considered the broad issues of sustainability.

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OVI 6c. Findings of policy constraints communicated to policy makers.

Findings of the Land Tenure Center's research are being disseminated to policy makers, through a series of workshops being at regional, national and international levels. LTC has expressed concern, however, that it lacks adequate funds to reproduce its reports to distribute them to all the parties who have requested copies.

Information on gender issues was disseminated to extension workers and policy makers at a workshop on "Income-making activities and appropriate technologies to ease the work of the rural woman," held in Labé in October 1994. The project's natural resource workshop, held in February 1994, is considered by the project staff to be contributing to the overall policy dialogue on issues of sustainability.

OVI 6d. Specific changes in policies/regulations announced/ implemented.

No specific changes in the land tenure code or its interpretation have yet been announced, but the LTC policy dialogue has supported recognition of customary land tenure, and should lead to such changes. No other policy changes have been announced or implemented as a result of project-sponsored activities.

Overall, the project is having a significant impact in the area of national land tenure policy reform and is contributing to an improved policy formulation process.

3.7 Monitoring and Evaluation

3.7.1 Overview

Monitoring and evaluation are key activities for development projects, essential for understanding the usefulness of project activities and providing information for improving strategies. It has long been standard practice for development projects to develop systems of monitoring, evaluating, and reporting upon their activities.

For many years, the "logical framework" has been used as the basis for project design, implementation, monitoring, and evaluation. The chosen indicators can be used for monitoring progress and assessing project impacts. Output indicators are used for monitoring progress and evaluating the performance of the technical assistance contractor(s). Project goal and purpose indicator(s) are used for evaluation of project impact, i.e., achievements by the end of the project. Thus, the logical framework can specify the essential elements of a rudimentary monitoring and evaluation system, through indicators to be monitored and suggested means of verification.

More recently, the U.S. Congress has mandated that USAID projects should monitor people-level (individual- and household-level) and environmental impacts. On the basis of this requirement, USAID projects worldwide are now seeking to develop more thorough

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Monitoring and Evaluation (M & E) systems. When the GNRMP was designed, Impact Monitoring and Evaluation was designated as one of the project components.

The conception of the project's Monitoring and Evaluation (M & E) System thus began as a system to monitor impacts, to meet Congressional reporting requirements. It has been built largely on the general natural resources management (NRM) analytical framework developed by USAID Washington.

According to the Project Paper, the M & E system also was to provide information to "allow mid-course corrections on strategy and project management ... [and] for the development and/or modification of national policies and programs for natural resources management." It was intended to serve as a pilot, or model, system for replication elsewhere in the Fouta and in Guinea.

Relatively little emphasis, however, has been given to how such a system could be used as a management tool by project participants and staff. To date, participation of the local population, and the Watershed Management Unit (WMU) and other DNFF staff, and related projects and institutions have been minimal in the conception of the system and the initial monitoring efforts. The system has not been used to provide information for national-level natural resource policies and programs. The ability of the DNFF to sustain, let alone replicate, the current system seems highly questionable.

3.7.2 Purpose and function of monitoring and evaluation

Criteria for evaluation. The Evaluation Team looked for the following characteristics in the project's M&E system:

- A clear expression of purpose and objectives of the M&E system linking the system to project goal, purpose, outputs and strategies. The system should provide the data needed for the objectively verifiable indicators in the logical framework.
- A clear indication of how the M&E system will be used by the project to determine whether their strategies and interventions are leading to the achievement of outputs and purpose during the implementation of the project, and a clear statement as to how it will be used to modify interventions and strategies as needed.
- A clear indication that the TA and field staff who will use the system were closely involved in the design of the system.
- A detailed description of the sampling and survey techniques to be employed. Methodologies should be spelled in sufficient detail that can be independently replicated and verified.

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3.7.3 Design of the GNRMP M&E system

In September 1993, Chemonics brought in a short-term consultant, William Guyton, an agricultural economist, to develop guidelines for an overall monitoring and evaluation plan. Subsequently, a Monitoring and Evaluation Plan was developed by the USAID Rural Development Officer, the REDSO Environmental Officer, the former Chemonics Team Leader and the head of a Guinean firm, Management Consultants. The guidelines and Plan propose that the M&E system should be based upon a generic natural resources management (NRM) framework developed by USAID/Washington. Thus, little attention was given to the Project design and logical framework, nor overall Guinean government needs for monitoring and evaluation, with respect to national-level policy and programming.

Work began on the M&E plan in late 1993, including a draft form of a proposed household survey. The draft M&E Plan was not finalized by REDSO until late 1994. Although the REDSO Environmental Advisor was supposed to come to Guinea in late 1994 to provide training on monitoring of environmental impacts, this training session has been postponed.

Before completion of the M&E Plan, Management Consultants was sub-contracted by Chemonics to design and implement an M&E system under the supervision of the Chemonics' technical assistance team, including the design and implementation of a baseline socioeconomic survey. Under the contract, Management Consultants is also supposed to monitor biophysical indicators such as soil pH. It should also compile and analyze information generated by project staff and other organizations, such as the Agricultural Research Institute at Bareng.

The contract calls for Management Consultants to design an M&E system. The head of Management Consultants told the Evaluation Team that they had been contracted to implement the Guidelines prepared by Guyton. The current Chemonics COP told the Team that Management Consultants is to implement the M&E plan. When one reads the M&E Plan and Chemonics' contract with Management Consultants, these documents state that much of the system development will be left to Management Consultants. The M&E system is therefore clearly incomplete and still under development.

The M&E system as it stands now is based strongly on the general NRM analytical framework developed by USAID Washington. It is not closely linked to the objectively verifiable indicators for goal, purpose and outputs in the project's logical framework. The GNRMP Project is based upon an implicit assumption that improvement of agricultural productivity will lead to decreased pressure on the natural resources, and thus contribute to improved watershed management. The existing M&E system cannot adequately evaluate this hypothesis. The M&E system does not provide for collection of data disaggregated by gender, although the logical framework specifies that gender analysis will be done. Although the M&E Plan states that all data collection should be done with special attention to lessons learned, it does not explain how this will be done.

The Evaluation Team read with particular interest Chapter 10 of the M&E Plan, entitled "Use of M&E findings." Section 10.1 is entitled "Improve project performance" and consists of a five-sentence paragraph. Section 10.2 covers M&E use for mitigation measures, project reorientation, and/or redesign: it is one paragraph long. The M&E Plan contains almost no indication as to how the M&E system could be used to improve project performance or for reorienting the project. If this is not made explicit in the design of the system, then the system probably will not be very useful as a management tool.

The evolving M&E system does not make adequate use of existing surveys and data. Under the IMWFD Project, some baseline assessments of the watersheds were undertaken. Over the years, a wide variety of research studies have been conducted in the Fouta -- on topics ranging from soil fertility, hydrology, agronomy, economic, social and cultural conditions. There is no indication that any of this information was assessed in development of the M&E system. Although the project undertook rapid appraisals of conditions in the watershed villages at the beginning of the project, as well as land tenure studies, these data have not been considered as starting points for monitoring and evaluation.

Care must be applied in choosing indicators. Many that have been suggested in the Plan are: (1) difficult and expensive to measure, (2) easy to measure but not representative, (3) measurements of activity (e.g., numbers or hectares per year) and not necessarily of progress, (4) ignoring the incompatibility between the project's time-frame and the time required to monitor significant change in dynamic systems, (5) many of the assumptions about the constraints on NRM are overly simplistic (i.e., the assumed boundary conditions of the hypothesis tested are false and resulting conclusions are likely to be wrong), or (6) dependent on organizations that do not have formal linkages (i.e., incentives) to collect, organize, and distribute data.

Indicators are presented in the M&E Plan without justification or explanation as to how they will be used. Many proposed indicators display a great lack of understanding of the resources that would be necessary to monitor them. For example, wildlife, biological diversity, land use and vegetation cover of the watersheds are to be monitored annually. Each of these by themselves would require very substantial resources to monitor them. The baseline survey is supposed to include data on soil texture and structure; why? A review of the M&E Plan by a USAID/Washington staff member noted that the proposed plan was ambitious, and would require considerably more funds than had been budgeted.

The M&E Plan is extremely sketchy regarding the critical area of sampling design and research methods. If the sampling is not well done, then the sample will not be representative of the larger population. Almost nothing is said about how the data collected will be analyzed and used.

3.7.4 The baseline survey

According to the Project Paper, the project is to carry out surveys to obtain data on soil productivity and income levels, through "periodic and unstructured, but 'targeted' visits/interviews of a carefully selected sample of farm families." Despite these instructions, the project staff has undertaken a formal, structured household survey. This was done by Management Consultants, between October and December 1994, after the project had been underway for almost two years. Subsequent follow-up surveys are planned for every six months.

This survey has been poorly designed and implemented, without the inputs from social and biophysical scientists and statisticians needed to choose the sampling methods, the questions to be posed, the data analysis, and the reports to be published. Given other data available, many of the questions seem ill-conceived. No methodology is specified, thereby making it impossible to replicate the survey. The Evaluation Team thus questions the usefulness of the entire exercise.

The baseline survey was put together by committee, with various parties suggesting information that they would like to have. As far as the Evaluation Team can ascertain, no rural sociologists, anthropologists, or other specialists in social survey research were involved in formulation of the interview schedules or individual questions. The purpose of the survey -- whether to provide descriptive, explanatory or exploratory data, or validate other data collected by the project -- was never clearly specified.

Although much sociocultural and economic data have already been collected on the project area, including the project's own rapid appraisals and land tenure studies, such information was not adequately analyzed, to serve as a basis for formulating the questions. (The village RRAs were conducted in early 1993. Reports were available in draft form, but an edited publication of the results was not issued until August 1994. The head of Management Consultants told the Evaluation Team that he had never seen these RRA results, even though they were available prior to the carrying out of the household survey.

The survey consisted*~~p686~~ of interviews and field measurements. The questions were designed to be asked of the household head (assumed to be male), although some questions were posed to the woman or women of the household. In addition to asking questions of the household head, the field researchers also went to the household fields, and took measurements of the crops being harvested.

The survey was conducted by three male field interviewers, each one assigned to a given watershed. The survey work took approximately 45 days. According to the project field staff, the interviewers were not adequately equipped for their work. The interviewers were provided with Vespa motorscooters that were inadequate for the field conditions, so the WMU staff assisted with transport. The interviewers allegedly did not have any means of protecting their survey forms from the rain.

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A pre-test of the survey was conducted in Dissa watershed with 15 families, under supervision of the head of Management Consultants. Subsequently, no supervision or spot checks were done of the field surveys as they were being conducted. The supervisor did visit the interviewers in the field, and examined completed survey forms.

In designing the sample for the household surveys, no statisticians were consulted. Originally it was proposed to sample 75 households, but then a decision was made to increase the sample size. The interviews were conducted of 150 household heads (50 per watershed, on the basis of 10 households in each of 5 villages). A structured random sample was used. First, five villages per watershed were chosen, on the basis of diversity of project-sponsored activities. Next, ten households per village were selected. The original aim was to choose at random five households that were "adopters" of project activities, and five that were "non-adopters," based upon project records. If a village had less than five families that were adopters, then more non-adopters were chosen, to arrive at a total of ten households per village. The survey questionnaire, however, does not contain questions to verify whether or not a household was an "adopter." (Nearly all respondents claim to have benefitted from the project.)

In two watersheds, all interviewed household heads were men: in one watershed, six of the fifty interviewed were women. These results are surprising, as other social survey data indicates that a high proportion of households in the Fouta are headed by women, due to high male seasonal or permanent emigration. Thus, the survey does not adequately sample women, although gender differences were to be monitored.

The written survey questionnaire was prepared in French and was not translated into the local language. Consequently, the field interviewers translated the questions on the spot into Pular or Sousou, then translated back into French and recorded the answers on the survey forms. Therefore, there is no assurance that questions were posed in a uniform way. Furthermore, no work was done to ensure that concepts or terms could be adequately translated into all the local languages in the Project area. For example, interviewers asked if the respondents own the land that they cultivate: over 95 percent of the respondents answered yes. This information does not correspond at all with other project findings, including detailed studies undertaken by the Land Tenure Center. Thus, one is left wondering exactly how the question, or concept of "land ownership," was translated into Pular and Sousou, and how the responses were translated back.

For assessment of crop yields, the field interviewers went to farmers' fields. Areas of 100 m² were chosen for measurement: depending upon the field size, between one and three sampling sites were chosen. The crop from the chosen area was harvested, put into sacks, and then weighed the following morning. The Evaluation Team was told that one field interviewer left the watershed to return to Conakry before completing the crop yield surveys. (Supposedly the interviewer told the farmers which areas were chosen for the sample, and to bring the harvest to the WMU staff for weighing.) As the fields being cultivated change from year to year, it is unclear how field sampling will be done in subsequent years, and what the results would indicate.

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The survey report produced in March 1995 is an extremely rough draft, written in English. Thus, most Guinean staff members are unable to read and comment upon it. The data analysis is very rudimentary: it only provides frequency breakdowns of responses. Data is not, for example, disaggregated by gender or by "adopters" vs. "non-adopters," etc. There is no explanation of which questions were asked to the male household head, and which to the woman (women) in the household. The methodology used is not adequately described, with respect to sampling, training of the interviewers, or taking of the field measurements. It would be impossible to verify or replicate the study.

3.7.5 Implementation of the M & E System

In beginning the project activities, project staff conducted rapid rural appraisals (RRA) of the conditions in villages in the three project watersheds. These appraisals provided information on general conditions, agriculture, and natural resources (water, soil, vegetation, forest, livestock, and pasture resources). They also assessed development constraints and priorities perceived by village women and men.

Some watershed residents have been involved in monitoring and evaluation, through participation in the various studies (RRA exercises, land tenure case studies, and baseline surveys). Peace Corps volunteers told the Evaluation Team that some villagers are feeling annoyed by the different people who come around asking the same questions. (The villagers have a valid concern: why repeatedly gather the same information, instead of more fully analyzing and exploiting the data already collected? If questioned too often, villagers may suffer from "survey fatigue," which will affect the validity of the information collected.)

Watershed residents have been involved in monitoring and evaluating project activities and impacts on an extremely limited level. After the initial RRA exercises, the project staff has returned to each village for meetings late in the year, to discuss with the villagers their perceptions, and villager priorities for the coming year. The information gained is then used by project staff as the basis of the following year's work plans. The villagers' Resource Management Committees also play an informal role in ongoing monitoring of activities, and liaison between the project staff and the villagers.

Participatory development is not merely local people providing information on their constraints and priorities, and then providing labor to undertake activities. If villagers are to take responsibility for their own development, then greater involvement of the watershed residents is needed in monitoring and evaluating the results of their own activities. In the past decade, a wide variety of approaches to participatory monitoring and evaluation have been developed. (Good sources of information include the Institute for Development Studies at the University of Sussex and the International Institute for Environment and Development in London. With respect to forestry development, much work has also been done by the Community Forestry Office of the Food and Agriculture Organization.)

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Watershed staff involvement

The GNRMP staff is, of course, monitoring and reporting upon their activities. Information reported from the watersheds is compiled by the Project Management Unit. Project reports note progress made on reaching the Objectively Verifiable Indicators for the outputs listed in the logical framework. Some reported data is disaggregated by gender. Nonetheless, this activity is not clearly recognized by the staff as part of the M & E System. Furthermore, it has not been clearly specified how some of these indicators are being assessed.

The Evaluation Team discussed monitoring and evaluation with project staff members, who seem to believe that the Impact Monitoring and Evaluation System is a separate component, not directly related to their ongoing activities. They think that the M & E System is the responsibility of the Guinean consultants. Some watershed staff noted, with irritation, that the Guinean consulting firm is asking them for data being collected by the WMU staff.

The original idea was that the watershed staff should be involved, as much as possible, in the fieldwork for monitoring impacts. The WMU staff, however, have not accompanied the interviewers on their visits to watershed households, nor have they received any training in the interviewing and crop measurement methods used. The field staff have not been involved in the analysis or interpretation of the data, nor its implications for project management and strategies.

Project management involvement

It seems evident that there is not a clear understanding on how this current M&E system will be used as a management tool by the project. None of the current LTТА are authors of the M&E Plan. The WMU directors and staff had very little involvement in its development. Yet, if M&E is to be a meaningful management tool, it must be these very people who play the lead role in defining what the M&E needs are, what are the key questions that need to be answered, and what information is needed to answer these questions. The project staff needs an M&E system that will show them, as early as possible, whether the individual strategies and interventions are contributing to the achievement of project outputs and purpose so that modifications can be made as early as possible.

Furthermore, it must be recognized that project staff -- not an outside contractor -- should have primary responsibility for monitoring and evaluation. The staff (and villagers) should be involved, not only in collecting some of the data, but also in its analysis and interpretation. This work is important for building local capacity, to be able to adapt plans and strategies based on how the situation develops.

DNFF involvement

If the M&E system is to serve as a "model" system for the Government of Guinea, the Guinean officials should have been more involved in its design. It would have been useful to consult with the government and other projects on their existing monitoring and evaluation systems, and needs. The European Community-assisted Upper Gambia

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project, for example, is developing its own M&E system. Although this project is headquartered next to the GNRMP offices, its staff members were unaware that GNRMP is developing a model M&E system, and had never been consulted about their own plan.

The DNFF is supposed to have assigned a full-time staff member to work on the M&E system, which has not been done. WMU staff were supposed to be involved in the baseline survey, but their participation was very minimal.

The DNFF is supposed to take over the implementation of the M&E system after two years. Given their inability to continue project activities in other pilot watersheds at the end of donor funding, it is unrealistic to think that they could take over implementation of an M&E system with their own resources.

3.7.6 Progress achievements

The entire logical framework presumes the existence of a monitoring and evaluation system, to measure indicators and assess progress towards project outputs, purpose and goal. The project staff is monitoring and reporting upon its activities, in terms of progress toward desired outputs. The project does not, however, yet have a functioning system for monitoring and evaluating strategies and impacts.

The project has an incomplete M&E Plan that states that the M&E system will be completed by Management Consultants. Chemonics has contracted Management Consultants to design and implement an M&E system for the project. They have not produced a design document. They have conducted a baseline survey, but there is no document describing methodology, sampling design or analytical techniques.

A list of key indicators has been prepared and was undergoing quite drastic revision during the Evaluation Team's visit. There is no clear, written justification or criteria for the choice of indicators nor is there a clear statement of how the each of the indicators will be used.

3.8 Project management: institutional partners, human resources and inputs

3.8.1 USAID

The GNRMP is managed under USAID's Rural Development Office. This office is headed by the Rural Development Officer (RDO) who has a project manager and a project management assistant overseeing this project. The current RDO started in December 1994. The former RDO had overseen the project since he was put in charge of finalizing the project design in 1991. The current project manager has been in place since the third quarter 1994.

USAID's management of the project has tended to stress cost efficiency of inputs, the rapid implementation of physical interventions on the ground and detailed planning and

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reporting by the contractor. There has been a tendency to be overly concerned with detail and less concerned with larger issues.

Less emphasis has been placed on strategic analysis of the agricultural and natural resource productions systems in the watersheds, on prioritization of key problems and their causes and on the development of clear strategies linking the project components to goal and purpose. Inconsistencies in the project logical framework have not been recognized and dealt with. The former RDO held the position that the technologies being extended are quite basic and do not require high levels of technical expertise. While this is very true for many of the techniques extended, a much higher level of expertise is required to evaluate which techniques in which situation will have strategic importance for achieving the project purpose. The project has been weak in this regard.

The project is working in three widely-dispersed, lowly-populated watersheds. Concern has been raised over the project scale, its costs, and the limited number of watershed residents (about 8000) benefiting from interventions. Some USAID staff members have proposed that the project should enlarge its geographical area of intervention, to increase the number of potential project participants and beneficiaries. The Evaluation Team believes it to be more appropriate to continue to concentrate on the pilot development of sustainable systems in the three existing watersheds for expansion in subsequent phase.

USAID has stressed low-cost simple technologies for the GNRMP. While this is generally appropriate in these remote watersheds, it may have negative environmental and economic impacts if pushed too far. Continuous cropping cannot be ecologically sustained over time without eventual replacement of nutrients removed with crop harvest, especially of phosphate. This is one of the principal ecological constraints to near-subsistence agriculture in tropical Africa. Strategies must be sought to develop commercial crops that can provide a commercial return on fertilizer inputs. While this is especially difficult in these remote watersheds, the judicious use of phosphate and other fertilizers should be demonstrated and encouraged, concentrating primarily on cash crops, especially the market garden crops that show such promise. The failure to follow normal modern farm practices with respect to fertilizer use which is common practice on the same crops where support comes from AMIP, inhibited production and reduced farm income.

The USAID mission has been indecisive on the replacement for the soil and water conservation specialist of the technical assistance team, alternating between requests to Chemonics for candidates for an agronomist or a S&W conservation specialist. In the meantime, the post has gone vacant to the detriment of the project.

3.8.2 Technical Assistance Team

Long-term Technical Assistance (LTTA)

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The technical assistance contract was awarded to Chemonics International in July 1992. Tropical Research and Development (TR&D) serves as a sub-contractor to Chemonics, in providing the services of the agroforestry and some short-term technical assistance. The initial COP was fielded in September followed by the soil and water (S&W) conservation specialist, the community enterprise development (CED) specialist, and the agroforester in October. A fifth LTТА position, that of the principal women's extension advisor, was created and filled in November 1993.

The TA team has suffered from turnovers and vacancies in key posts. The first COP and the S&W conservation specialist left the project in October and September 1994 respectively. The S&W specialist position is still vacant. The COP position was filled in December, although the new COP had to leave in early 1995 to pack out his family.

All of the present and past LTТА are, or have been, committed, hard-working individuals who have brought different levels of expertise and experience into the project. The first COP concentrated on setting up the Project Management Unit in Labé and on the administration of the project. He did quite an exceptional job at this. He maintained good relations with GOG officials and with USAID. He appears to have been less successful in facilitating a strategic analysis and planning process for the project.

The soil and water conservation specialist was spoken of very highly of by nearly everyone in the WMUs. He was described as very dedicated, hard working and "*polyvalent*" (meaning he was technically competent in a number of fields, including installation of solar panels). The Guinean staff greatly regrets his departure.

The CED has promoted a broad range of enterprises within the watersheds. Initially he was responsible for working with the women extension agents as well as the enterprise development staff. For the most part the enterprises promoted appear to be profitable. The advisor has particular experience in beekeeping, and devoted considerable attention to promoting this enterprise. This activity is a good income-generating activity for all three watersheds, and could still be expanded profitably.

The agroforester is the most junior member of the team and is probably confronted with the most demanding of the technical positions. The development of an agroforestry program in a new area requires the identification of shrubs and trees that are both ecologically adapted to a given site and that can be integrated in different configurations into the local production systems for widely varying purposes. This work necessitates a significant program of on-farm applied research trials that often take years to give results. But more importantly, it requires a strategic analysis and prioritization of overall needs for each watershed. The potential contributions from different agroforestry techniques must be assessed by priority need. Then an agroforestry development program can be developed for each watershed. This higher level of strategic analysis has been insufficiently developed in the project.

The principal women's extension advisor is the only Guinean and the only woman on the TA team. She is very proficient in the local languages, has a good rapport with villagers,

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and is generally well regarded as an extension advisor. She feels that she needs more training in participatory extension techniques.

Travel time

The technical advisors unavoidably spend a large part of their time on the road because of the three widely dispersed project sites. The average round trip between Labé and the watersheds takes 7.4 hours, or one working day. With each watershed visited each month, an average of three days a month are devoted just to travel by each TA. Often this situation results in spending only a few work days per month in each watershed. Most watershed staff members would like the advisors to spend more time in the watersheds. Several options were discussed, but no obvious solutions are apparent.

Short-term Technical Assistance (STTA)

The overall project was designed with 40 person-months of short-term technical assistance, of which 30 months was to have been provided by the Technical Assistance Contractor. Given the pilot nature of this project, one would have expected that much of the STTA should have been programmed early in the project implementation. Several proposed consultancies were rejected by USAID on various grounds. As of the end of 1994, the Chemonics contract remains with 20 person-months of technical assistance budgeted for the last two years. The project's National Coordinator has expressed a desire to see more use made of Guinean expertise for short-term consultancies.

In the 1995 Work Plan, the following short-term consultants have been proposed, to deal with policy analysis issues concerning access to outside markets, sustainability, and forest policy:

- Non-traditional Export Crop Specialist (Expatriate, 5 weeks)
- Experienced Sociologist in Community-Managed Natural Resources (Expatriate or Guinean, 2-1/2 months)
- Forest Policy Specialist (Expatriate or Guinean, one month)

Other possible short-term consultants identified included:

- Credit Specialist (three 2-week interventions)
- Agronomist (Guinean or Expatriate, 2 months)
- Rural Animal Husbandry/Livestock Expert (4 - 6 weeks)
- Transformation of Agricultural Products

The project has made limited use of STTA in areas concerned with developing participatory approaches to development and management, extension, and monitoring and evaluation. These areas need greater attention in the remaining two years of the project. The Evaluation Team therefore concurs with the 1995 Annual Work Plan, that a

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sociologist is needed to work with the project staff to develop villager approaches to natural resource management within their *terroirs villageois*. The Evaluation Team, however, would like to suggest that the proposed scope of work should be somewhat revised, to focus more broadly on developing approaches to natural resource and land use management, rather than just management of forest resources.

3.8.3 Direction Nationale des Forêts et de la Faune (DNFF)/Government of Guinea (GOG)

Local counterpart funds (PL-480)

Management of the local counterpart funds has been a recurrent problem. The Government of Guinea has placed the funds in the Central Bank. Due to other pressures on the government, such as macro economic policies adopted under the guidance of the International Monetary Fund (IMF), the PL-480 funds are not always available when needed for project activities. Although USAID has held discussions with the GOG on the need to move such funds to a commercial bank, this change has not yet occurred.

The GOG and the DNFF manage the local counterpart (PL-480) funds for the project, which count as a significant proportion of the Guinean contribution to the project. There have been serious delays of up to five months in the availability of PL-480 funds managed by DNFF/GOG. This has negatively impacted the Project. Most of the applied research trials begun by the Bareng and Foulaya Agricultural Research Centers in 1994 were lost due to these delays. WMU contractual staff went for months without pay, affecting morale and performance.

Worldwide, USAID is phasing out use of PL-480 commodities to finance development activities. Various parties with whom the Evaluation Team met had differing opinions as to whether or not the existing PL-480 project funds would be adequate to fund all programmed activities through the PACD. DNFF has apparently decided to reduce the staffing level in each project watershed from 12 to 11 personnel.

The Guinean Government has been responsible for supervising construction funded by the project using PL-480 funds. The original PP had only US\$ 349,635 in counterpart funds (PL-480) budgeted for construction. The project has funded building of compounds (*cités*) in each watershed, which provide offices and staff housing. These compounds are equipped with running water, solar panels and electrical generators. The *cités* in Diaforé and Koundou have borehole wells, whereas the Dissa *cité* is supplied with water from a spring in the mountain behind the compound. The *cité* at Diaforé alone cost \$250,000. (One reason for the high cost was that sand used in the cement was trucked in from Labé.) The relative luxury of these project compounds must reinforce the villagers' impression that the project has great financial resources and will bring them many gifts (*cadeaux*). The Evaluation Team was told that the original contractor for the *cité* in Dissa disappeared out of the country, without doing work for which he was paid.

The Evaluation Team understands that an audit of use of PL-480 funds will be done.

Watershed activities

All the WMU staff are managed by the DNFF. The WMU staff is composed of a mix of civil servants of the DNFF or other MARA directorates. They are complemented by individuals contracted by DNFF for the duration of this project. The project is almost totally reliant on the WMU staff for its field activities, including all extension work with watershed villagers.

Although very difficult to verify during the brief visits to the watersheds, the Evaluation Team frequently heard reports of apparent lack of incentives for technicians to work in field, low levels of technical expertise, low morale of project personnel, and of tendencies toward a classic approach of aiding, but not empowering, villagers. WMU staff whose families do not live in the watersheds frequently extend their weekends on both ends. The DNFF has not prepared scopes of work for the WMU staff. The DNFF has no performance-based incentive system for either the civil servants or the contractual employees nor does the DNFF have an established system for random checking the quality of work done.

Poor motivation of WMU staff has limited the numbers of replication of the interventions that the project has introduced. There are some highly motivated and capable people within the WMUs; they should be allowed to flourish through a performance based-incentive system. Training assignments and motorcycle contracts need to be reevaluated and designed to encourage field work.

The WMU technicians have been assigned motorcycles to conduct their field work. To encourage them to take better care of the motorcycles, a system has been set up for them to purchase the motorcycles over four years through payroll deductions. They also each receive a monthly allowance for fuel and periodic allowances for tires. Many of the technicians complained that the motorcycles will be completely worn out within three years. But some of the technicians do not use their motorcycles, or use them very little. Purchase over four years creates a perverse incentive for the staff to minimize the use their motorcycles for work in order to keep the motorcycle in better condition for the day that it becomes their property. Also, if they do not use their motorcycles, they can pocket the fuel allowance. The WMU Directors use their motorcycles very little, as they have access to other Project vehicles. Some of the technicians, including most of the women, do not know how to ride motorcycles and have not been provided training.

Regional activities

During the life of the project, the position of Regional Coordinator in Labé has often been, and currently is, vacant. The FDHRIDS is essentially non-functional. The regional documentation center is kept locked, as many documents have disappeared (been borrowed and never returned) over the years. The DNFF has appointed a staff member to work with the project on media presentations. DNFF, however, has not yet appointed a person to work with the project's monitoring and evaluation system, which is intended

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to be a model for the GOG to replicate elsewhere. Thus, this situation will make it difficult for the GOG to compare the results of the different watershed projects funded by various donors.

The DNFF/GOG has not been able to continue activities in other watersheds where donors have pulled out after an initial phase. The inability of the government to sustain these activities must be a prime consideration in assessing the sustainability of activities undertaken by the GNRMP. The project should not count on the DNFF/GOG for continuing project activities after the end of donor funding.

3.8.4 Peace Corps

The first group of six Peace Corps volunteers arrived in 1991. They were assigned to the watersheds before there was a functioning project. This situation was highly unsatisfactory: only one volunteer of this first group stayed for two years.

The current group of Peace Corps Volunteers arrived in 1993 and have also been faced with many frustrations. They do not, in general, have natural resources or agronomic backgrounds. Peace Corps provided them with very minimal training in the local languages. They did not have motorcycles and helmets until over three-fourths of their two years had elapsed. There were delays in the construction of their housing. Despite this, the volunteers have generally become well integrated into their communities. Only one volunteer terminated his contract early. Another volunteer is planning to extend her contract for a third year.

Peace Corps' Office of Training and Program Support (OTAPS) had sent a forestry advisor to Guinea in August 1993, to try to clearly define the roles for the second group of volunteers. The volunteers were expected to carry out extension work. Nonetheless, the volunteers found that their roles in the project were not well defined, as they overlapped with the responsibilities of the Guinean staff. The PCVs have not been well integrated into the project during most of their stay. The lack of clearly defined roles and responsibilities were especially difficult for the WMU staff members, who are used to more structured work situations. The former COP of the technical assistance contractor did little to facilitate the integration of the PCVs. Peace Corps' staff members in Conakry probably could have done more to clarify the volunteers' roles.

The PCVs live in watershed villages. Since they do not live at the WMU *cités*, they do not get invited to staff meetings unless the WMU director sends them a message or they happen to learn of it. Even when programmed to work with the WMU staff on activities, the lack of transportation often made it impossible until they got their motorcycles. Most of the current PCVs ended up spending much or most of their times on secondary projects not directly integrated into the GNRMP. Primary school construction has been their primary activity; others include dispensary and market construction and mid-wife training.

The situation for the six incoming trainees (all women) that will begin training in June 1995 should be much improved, although significant questions still remain. They all have

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some type of natural resources or environmental background, which should stand them in good stead. They will all get one month of local language training in-country, in addition to their French and technical training in Senegal. They will use the housing and motorcycles of the outgoing PCVs.

Furthermore, the current PCVs have recommended, and Peace Corps has agreed, that the new group should all work in developing environmental education through the primary schools. It has been agreed with the project management that each new volunteer will spend time with each of the watershed technicians, before deciding upon whom to work with as a counterpart. What "environmental education" means in this context has not been adequately defined, nor is it clear to what extent the new PCVs will be integrated into the ongoing NRM component of the project.

Most of the WMU staff members spoke quite highly of the PCVs and appreciate what the PCVs have been able to accomplish. Some of the volunteers were described as occasionally getting impatient or frustrated when things do not get done as quickly as planned. But their Guinean colleagues seem to be quite understanding of this reaction, given the relative youth of the volunteers.

3.8.5 Land Tenure Center

According to the LTC Project Director, the LTC worked with the GNRM Project for a period of 18 months, between October 1992 and March 1994. This work involved research in the 3 pilot watersheds, examining tenure relationships, resource management practices, tree tenure, water rights and grazing rights. LTC also provided two short-term consultants, for examining management options for the Nialama Forest in Koundou watershed, and possible financial returns to investments in Dissa and Diaforé watersheds.

During this time, the LTC Project Director attended (when invited) some of the Project's monthly meetings in Labé. Collaboration has not been formalized, however, in exchange of information or documents, and there has been no formal process for the incorporation of LTC's work into other project activities.

Subsequently, LTC has been working on a national level, conducting case studies and workshops as part of a process of policy dialogue. (This work is discussed above, in Section 3.6.1.) This second phase of LTC work began in March of 1994, and will probably run through March of 1996.

The Land Tenure Center has an ongoing contract with USAID. The first and second phases of LTC work have been funded through a project buy-in into the central USAID contract. The total LTC work on land tenure issues is costing approximately US \$ 1.3 million. The original GNRM Project, however, only allocated US \$ 0.5 million for all policy studies, but this allocation has been increased to US \$1.3 million. According to USAID's most recent semi-annual Project Implementation Report (covering October 1994-March 1995), USAID is considering preparation of a Project Implementation Letter

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(PIL) to transfer some funds from the technical assistance line item of the project budget to cover these commitments.

Although this second phase of LTC work is funded through the GNRMP Project, most people whom the Evaluation Team interviewed did not consider the two activities to be related. The watershed technicians, for example, told us that the work with LTC was over. When LTC had its regional workshop on land tenure issues for Middle Guinea, which was held in Labé in February 1995, only one of the two pilot watersheds located in the Fouta sent a representative. Due to other commitments, none of the PMU technical advisors attended the conference.

3.8.6 Linkages within the overall project

Within the project itself, the watershed technicians have limited contact with their counterparts in the other watersheds. Only the watershed directors attend the project's monthly meetings in Labé. The project is planning this year to organized study tours between the three watersheds.

The work of the Land Tenure Center was not integrated as well as it could have been in the past and no formal mechanism was set up for integrating their research results into the project. Most PMU and WMU staff members now consider LTC's involvement in the project to have been finished.

As already discussed, Peace Corps integration has been particularly weak. It seems to be improving considerably, but needs close attention by all parties to achieve a more effective partnerships with clearly defined roles for the PCVs.

3.8.7 Linkages with other institutions and projects

Several other projects have carried out similar or related activities elsewhere within the Fouta Djallon and Guinea. An original intention of the Government of Guinea was that much sharing of information between similar projects would occur. The GOG has not been able to insure an effective coordination of the various donor projects. The map and documentation center in Labé is largely inaccessible to projects like the GNRMP. No overall monitoring and evaluation system for the pilot watersheds has been set up.

To date, the project has collaborated with similar projects in the Fouta Djallon only to a limited degree, primarily in terms of study tours and workshops or conferences. In February 1994, the Project organized a workshop on natural resource management in Labé, to which representatives of other projects were invited. Similarly, in October 1994, a workshop had been held on women and development.

The GNRMP has had successful linkages with the USAID's Agricultural Marketing Investment Project (AMIP) and its rural roads project. Representatives of the AMIP project were consulted in both Labé and Conakry. It was apparent that initial joint efforts by GNRMP and AMIP in a seminar in Souguéta were fruitful and that watershed residents

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could benefit by additional contact with AMIP. CED staff needs to assist area residents in making more effective contact with input suppliers and buyers. Then, after the project has finished, entrepreneurs will have developed the expertise needed to make and maintain outside contacts necessary to keep their businesses operating and growing.

The project rebuilt the road from Koundou to the Labé-Senegal road and improved or constructed at least three new bridges on the Tougué-Diaforé road. These improvements have been crucial for the improved marketing of products from these two watersheds. The overall condition of the Tougué-Diaforé road remains, however, a major constraint. Collaboration with the rural roads project will be important for future efforts.

Little or no linkages have been established with USAID projects in primary education, family planning and local governance. The proposed co-management of the Nialama Forest would offer a forum for working on local governance issues.

3.9 Overall Impacts and Sustainability

3.9.1 Impacts

Environmental impacts

"Hardly anything is as destructive in terms of maintaining a balanced environment as the expansion of impoverished smallholder farming producing unfertilized arable crops in a tropical setting." Ruthenberg, 1980

The assessment of environmental impacts is primarily subjective as the M&E system is not yet functioning, especially for biophysical indicators. The environmental impacts of the project to date appear to be relatively small and generally positive. There are some areas of concern that will need to be monitored.

One must start this section with the recognition that the environment of all three watersheds was actively degrading before the project began. Unsustainable agriculture is the principal culprit, especially the slash-and-burn agriculture practiced on the exterior fields. Slash-and-burn leads to loss of forests, wildlife and biological diversity in general. It leads to soil depletion and diminished productive potential for a range of land uses. Any improvements in the sustainability of agricultural systems and any reductions in slash-and-burn should have positive environmental impacts. Slowing the rate of degradation should also be considered to be a positive environmental impact, if this is a result of the project.

The construction of rock bunds for erosion control have certainly had a positive environmental impact by slowing the rate of degradation of agricultural soils and by increasing infiltration. This has primarily affected the *tapade* gardens, especially in Koundou Watershed. The practice of composting should have had small positive impacts on the sustainability of *tapade* and lowland gardens. The overall project impact on

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tapade gardens has probably been to slow the rate of degradation. With the exception of a few trial plots, the project has had almost no impact to date on increasingly the sustainability of agriculture on the exterior fields. Live fencing and other agroforestry techniques under development cannot yet be considered to have had any significant environmental impact on the watersheds.

Continuous cropping cannot be environmentally sustainable over the long term without the replenishment of essential nutrients, especially phosphate, lost through harvest. The project has promoted organic gardening using compost, green manure, and animal manures that take nutrients from one part of the ecosystem to support cropping on other parts. Soil analysis done by the project show that many, if not most, agricultural soils in the watersheds are already severely deficient in phosphorous. As Pedro Sanchez, the General Director of the International Center for Research in Agroforestry has stated, "ultimately, phosphate has to come out of a bag" if agriculture is to be sustained. Cereal crops are especially problematic because they generally concentrate about 80% of the phosphate taken up by the plant in the cereal grain. This phosphate is removed from the farming system through harvest. The project should demonstrate and promote the benefits of chemical fertilizers wherever they can be shown to be economically viable. For tropical agriculture at today's population levels, there may be no such thing "sustainable poverty."

Small enterprise development, especially of market gardening in Diaforé Watershed, may be having more environmental impacts, both positive and negative, than most other project activities. These impacts, however, have not yet been quantified. Small enterprise development holds the potential for providing economic alternatives to environmentally destructive practices, such as slash-and-burn agriculture. This may be taking place in villages in Diaforé where market gardening has had a greater socio-economic impact than any other project activities to date. The linkages between enterprise development and the sustainability of land use systems is critical; the M&E system must be developed in such a way as to make these linkages very clear.

While market gardening may be providing a substitute to slash-and-burn agriculture, other potential impacts also need to be monitored. Dry-season emigration has virtually ceased in at least one village visited by the Evaluation Team because of the economic alternatives offered by market gardening. Does this result in increased demands for food crops (from unsustainable systems), for firewood, for water, etc.? Will it lead to increased demographic growth in the villages?

Most market gardening is practiced on bottomlands close to springs and wells. Some of the bottomland sites are heavily vegetated streamside or floodplain forest stands. Some of these sites probably have some of the greatest biological diversity remaining in the watersheds. Will market garden development lead to the destruction of riparian vegetation? This needs to be monitored and controlled.

The GNRMP is part of the multi-donor FDHIRD umbrella project for the Fouta Djallon. One of the objectives of the FDHIRD is to "improve the living conditions of its (the

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Fouta Djallon's) people as well as the people living in Guinea's neighboring countries irrigated by rivers that originate from the highlands." Although not specified in detail, this can be interpreted to mean the improved quantity, quality and timing of downstream flow in the dry season. The Niger has actually ceased to flow in the dry season in recent times (e.g. June 1985 above Niamey). To date, market garden development by the project has significantly increased the dry-season demand for water from springs. This may actually have the impact of decreasing downstream flows in the dry season. This could be offset, if the project expands its activities to include real management of the water recharge areas for the springs. To date, the project has had negligible impact on water recharge.

Dry-season burning probably ranks close to slash-and-burn agriculture in its overall impact on the environment of the watersheds. The project seems to have had little or no impact on dry-season fire management to date.

The project has had positive impacts on the health of watershed residents, especially through improvements in potable water. Improvements in socio-economic conditions can be expected, over the short term, to lead to declining death rates while birth rates remain high. This will result in increased demographic growth over the short term. Increased demographic growth in the watersheds can be expected to have negative environmental impacts. Over the long term, environmental stability will necessitate stabilizing watershed populations. Significant reductions in population growth can be expected to require very significant increases in standard of living, a minimum level of basic education, an enhanced role of women in society and basic primary health care. These are all factors that must be addressed if one is to take a long-term approach to environmental sustainability in the three watersheds. These factors are, however, by no means unique to the watersheds.

People-level impacts

The people-level impacts of the project have been important in three major areas: (1) improving the living conditions of the watershed residents, particularly with respect to health, education, and income; (2) political empowerment, through creation or reinforcement of groups to gain increased access to resources; and (3) issues of social equity. These impacts are important on individual, household, group, and community levels.

With respect to improving quality of life, the project's largest impact has been in the management of water sources and thereby increasing access to potable water. The health benefits of potable water are well recognized by the local people. These managed water sources also reduce the workload of women and children, saving them time for other productive activities.

The doctor posted at Linsan-Saran confirmed that the management of water sources has already produced a noted drop in childhood incidence of diarrheal diseases. Peace Corps volunteers have also been able to arrange for training of midwives in the watersheds. In

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Koundou, the women's extension agent has also collaborated with the health center, through encouraging pregnant women to seek medical counsel and encouraging parents to bring their children for medical care and immunizations. In Diaforé, the Evaluation Team was told that the women's extension agent has been teaching women how to cook some of the new vegetables that they are growing, such as the green tops of onions, which is contributing to family nutrition. Similarly, efforts at improved poultry production also improve household nutrition.

Another area in which quality of life has been greatly improved has been in the area of transport and communication. The project assisted with road improvements in Diaforé and Koundou watersheds. In Diaforé, the project worked on some bridges to ensure access during the rainy season. In one village in Dissa watershed, the villagers themselves improved their road, so that project personnel could more easily reach them, and so that the villagers could more easily get their agricultural produce out to market.

The most marked impact of road improvements has been in Koundou watershed. According to local residents, before the project, it was very rare for vehicles to reach Linsan-Saran -- perhaps only one per month. Now, with the improvements, almost every day there is one or two vehicles. This change has meant that it is easier for local residents to get themselves, their agricultural produce, and other goods in and out of the watershed. It also means that local residents who have emigrated elsewhere now have more incentive to return and invest their money in development of the watershed. For example, emigrés have recently aided local residents to construct a new mosque in Linsan-Saran, which reportedly cost over GF 315 million. Another emigré financed the construction of the local health center.

The project has also contributed to increasing local standards of education, knowledge and skills. In each watershed, the project has worked with the Peace Corps volunteers and local residents to build two new primary schools. The Peace Corps volunteers have obtained non-project funds, either through Peace Corps Small Project Assistance (SPA) funds or from the U.S. Embassy. Peace Corps volunteers are now developing plans for environmental education programs for the watersheds.

All the project's work with local residents has involved training, and development of local knowledge and skills. While some of these skills may be specific to natural resources management or enterprise development, other skills have much broader applicability.

The project activities have been improving income-generating opportunities for watershed residents. The impact has been most noticeable in the agricultural production and enterprise development activities, especially the market gardening. The project's activities supporting improved management of natural resources also indirectly contribute to income-generating opportunities.

The project activities also contribute to political empowerment, through helping groups gain increased access to, or control of resources. For example, the project staff have worked to assist market gardening groups to obtain access to land. This approach has

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been particularly beneficial for women, who traditionally do not own land and have limited use rights.

The process of creating, or reinforcing, economic groups and resource management committees also may lead to local empowerment. Although some of the women's groups, for example, do not make much money, they seem to be important as a means of political development, giving women the chance to develop managerial and decision-making skills, and to raise their awareness of resource management issues.

It is quite early to tell whether or not the resource management committees will evolve beyond one or a few limited objectives to a broader management of the *terroir villageois*. If they are able to do so, however, then the project's efforts would contribute to larger objectives of supporting democratization and governance, and efforts to decentralize management and development responsibilities.

An important social impact to be that needs careful analysis is the question of social equity. Is the project supporting equitable development of infrastructure, resource management and enterprise development throughout the project watersheds? This issue can be examined with respect to accessible vs. remote villages/families, social class and ethnic differences, gender differences, wealth differences, and project collaborators/adopters vs. non-collaborators.

Project technicians have worked with watershed residents on community, group, household, and individual levels. The project staff have worked with villagers who "volunteer" to participate in pilot interventions. In some areas, however, there is evidence that such interventions may be disproportionately assisting particular individuals, families or villages with multiple project interventions. Project interventions may particularly benefit wealthier families, especially those owning land, livestock and/or existing businesses, thereby disenfranchising the others. Long-term natural resource management practices will primarily benefit landowners, rather than those who borrow land. Similarly, activities focusing on livestock management, such as animal traction, tend to favor wealthier residents. The project interventions are more noticeable in villages closer to the watershed headquarters (*cités*) and in more easily accessible areas. Due to the motorcycle contracts, the watershed staff have disincentives to travel to the more remote areas.

The project staff took the Evaluation Team to visit certain families who seem to have been particularly favored by the project, in that several demonstration activities have been conducted with the same families. For example, in Koundou, the Evaluation Team saw one household, which was cultivating within the boundaries of the classified forest of Nialama: the project had provided this family with help on animal traction and improved poultry, and worked with them on establishing an alley-cropping trial. In Dissa watershed, the Evaluation Team visited another family that had received assistance with animal traction, composting, gardening and field trials improved varieties of manioc. It may perhaps be that such families are atypical, but the project staff chose them to simplify field visits for the Evaluation Team.

While it is common for development projects to work with "model farmers," it is also well known that such an approach may not necessarily spread to other farmers. It is certainly easier for watershed technicians to continue to work with families or individuals that have been "cooperators" already, rather than seek the involvement of new participants. Furthermore, it may be easier to work with wealthier families, as they may be more willing to take risks and experiment with new practices. The Evaluation Team, however, feels that this approach may further marginalize the poorer residents of the watersheds. Therefore, it seems important for the project staff to monitor participation in project activities not only on an individual, but also on a household level, and to more explicitly address this issue of social equity.

3.9.2 Overall progress towards project purpose

Once again, the project purpose is "to improve the management of natural resources in three target watersheds in the Fouta Djallon Highlands for profitable and sustainable agricultural production". One must recognize that achieving "profitable and sustainable agricultural production" in the three watersheds selected is an extremely ambitious undertaking that is inherently very difficult in the three pilot watersheds, especially the two northern remote sites of very difficult access. The project has made only moderate progress towards achieving the project purpose.

Achieving profitable, sustainable agriculture faces severe constraints due to the high cost of importing inputs needed to sustain agriculture, especially phosphate, and the high cost of transporting agricultural production to markets. To complicate matters, the project has adopted a policy of promoting organic gardening, even on market garden crops that might be able to pay a positive return on chemical fertilizers and other purchased inputs. Unlike the developed world, organic products demand no premium price in local markets.

Despite these constraints, the progress has made notable progress in developing profitable market gardening in one of the three watersheds, Diaforé. This has already had a significant socio-economic impact in some villages. Dry-season emigration has stopped or been drastically curtailed because of this new economic opportunity. Profitable gardening in Diaforé is due more to the introduction of new vegetables and new varieties, to water point development and to agronomic practices than to improved natural resource management.

At present, market gardening is being sustained by additions of organic matter and nutrients from elsewhere within the village lands. Use of chemical fertilizers should be demonstrated and promoted on market gardens to the extent to enhance the overall sustainability of agriculture in the watersheds.

Profitable market garden development in the other two watersheds has been much more modest. Modest improvements to the sustainability of the *tapade* gardens has been achieved through better erosion control and through composting. Long-term depletion of soil phosphate reserves has not been addressed. The overall impact of the project to date has probably not increased the profitability or the productivity of the *tapades*.

The project has had almost no impact on the sustainability and profitability of the slash-and-burn exterior fields. Many of these fields could never be made sustainable over the long term. The soil fertility and productivity of the exterior fields are almost certainly continuing to decline. The best strategy for dealing with slash-and-burn agriculture on steep or marginal sites is to develop other economic alternatives for these farmers. This may be occurring with the market garden development in Diaforé, but it has not been monitored or documented.

3.9.3 Considerations of cost-effectiveness

Questions have been raised over the high cost of the GNRM in comparison to the small populations in the three watersheds (about 8000 people). Cost effectiveness should not be ignored, but it must be analyzed within its proper context.

One must always remember that this is a pilot project. Developing sustainable, profitable agricultural and natural resource management systems in these remote watersheds is not a simple task. This project should not yet be considered operational. It should focus on developing systems that are economically, socially and ecologically sustainable and replicable. The task is not simple: the other pilot projects in the Fouta have had little success in this regard. The GNRMP, therefore, needs to make a renewed effort at analyzing the fundamental constraints to achieving productive, sustainable land use systems in the Fouta and periodically re-evaluate their strategies for overcoming these constraints.

3.9.4 Long-term sustainability

Provisions for Sustainability

The project design attempted to encompass a wide range of activities, in efforts to address needs for developing sustainable agricultural production, enterprise development and natural resource management approaches. The project paper identified a number of key problems, such as technological constraints for natural resource management and agricultural production, financial and human resource constraints of the Government of Guinea, policy and regulatory issues concerning land tenure, marketing constraints, and other constraints facing the watershed residents, such as limited labor, cash flows, inadequate health and education, isolation and poor infrastructure.

The project design attempts to address these constraints on several levels. First, it deals with pilot interventions and field trials in three watersheds, and training of watershed residents. Second, it involves training of Guinean government staff members, to develop their skills in natural resource management and land tenure. Third, it is sponsoring some policy studies relating to national-level issues, such as land tenure, forestry, and environmental management.

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The project paper specifies that the success of the project will be evaluated on the basis of sustainability, defined as:

the number, types, and impacts of activities which (1) lead to direct or indirect increases in agricultural productivity; (2) are consistent with sustainable use of soil, vegetation and water resources, and (3) are implemented and/or maintained by resource users themselves.

...Some interventions are expected to spread through a diffusion and adoption process beyond the target watersheds (e.g. soil conservation, in-field tree planting, improved fallows) while other interventions requiring more technical and financial input (e.g. spring capping, gabion structures, small barrages) are expected to spread only with continued GOG or donor assistance.

The Guinea NRM Project will include both types of activities, but will concentrate on those likely to be spontaneously replicable, economically profitable, and socially feasible with relatively low inputs of technical expertise and a minimum of purchased materials.

Thus, the project design aims primarily to address the sociocultural, financial, and environmental dimensions of sustainability. Through work on policy analysis and dialogue, however, the project also intends to contribute to political and institutional dimensions of sustainability. The latter will include dialogue with DNFF on changing its role to promote more sustainable natural resource management.

Local capacity to sustain project activities

Moderately good progress has been made in developing local capacity for sustainability. It is clear that the GOG is not in a position to continue project activities beyond PACD. The project must concentrate on building local capacity for managing their resources and for sustaining the activities begun with project assistance.

The project has been very successful in involving communities in the analysis of their problems and in the definition of their priorities. The project has made a concerted effort to create village-level management committees to manage capped springs and wells and to undertake tree planting around springs, rock bund construction and the like. Much more needs to be done to build upon this base to develop local capacity for managing their own resources, i.e., to sustain what the project has started. This approach is vital for ensuring long-term adoption and sustainability.

The very high profile of the GNRMP, with US \$ 17.9 million in funding, probably hinders efforts at building local capacity. Although only \$350,00 was originally budgeted for construction, the *cité* at Diaforé cost a quarter of a million dollars by itself. The *cités* are luxurious by local standards and give the impression that the project comes with unlimited resources. Each WMU has a staff of 12. Land Cruisers and expatriate technical assistants come and go continuously. Capped springs, wells and schools are

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financed by the project. All of this gives the impression that "*Projet Cadeau*" has arrived. How can one convince villagers in this situation that all of these inputs are temporary, and that they must rely on developing their own capacities for resolving their problems?

The heavy investment in project management infrastructure must be questioned, as it is apparent from other pilot watershed projects whose funding has ended that the GOG is not able to continue project activities on their own. Investments in human resources development of WMU staff will certainly benefit Guinea in general, but how many of these people will have any role in the watersheds after PACD? If a greatly expanded role of NGOs is deemed most appropriate for the implementation of GNRMP II, what will become of the present contractual staff? Might they form their own NGO or be picked up by existing NGOs? Will the *cités* be of use in a subsequent phase if implementation is done through NGOs?

Although not currently specified as an objective, the Evaluation Team believes that it is imperative for the project to address issues of social equity, to ensure long-term sustainability. Restrictions on land ownership by gender and by class pose major issues of equitability. The project should work to promote social equity, such as taking particular efforts to work with those who are poorer, do not own land or large livestock, or who live in more remote areas. The project staff should monitor participation in interventions by individuals and families, and take steps to ensure more equitable participation.

Sustainability of project interventions will ultimately depend upon the degree to which watershed residents adopt more sustainable production systems. Watershed residents appreciate the project interventions, and are willing to cooperate on future activities. Most villagers, however, seem to be awaiting project proposals for future efforts, and are not yet generating ideas on their own.

Economic and ecological sustainability

Economic sustainability cannot be disassociated from ecological sustainability. At very low population levels, traditional agriculture could be sustained with long fallow periods and use of animal manures. However, at today's population levels and the degree of soil depletion in the watersheds, productive agriculture can only be attained and sustained if agriculture becomes a commercial, market oriented activity that can cover the costs of agricultural inputs such as phosphate fertilizer. Agriculture must be intensified on the best soils with the most moderate slopes. Subsistence food crops cannot pay for the costs of nutrient replacement that is ultimately necessary to sustain agriculture. Fields on marginal sites and steep slopes where annual cropping cannot be sustained must be gradually converted under perennial crops, pasture or forest land. Land tenure and cultural restraints to achieving such changes are, of course, very substantial.

The project has made relatively small progress towards defining and achieving economically and ecologically sustainable agricultural production systems. The project

has not addressed the problem of long-term depletion of phosphate and other nutrients that result from continuous cropping. It has concentrated on organic gardening techniques that move nutrients around within the ecosystem, but that do not deal with long-term nutrient replacement. The project has intentionally avoided promoting the use of chemical fertilizers on the market garden crops that are some of the only crops that have the potential for economical return on investments in fertilizers.

Small enterprise development in general shows moderate potential for providing sustainable economic alternatives to unsustainable agricultural and other land use systems.

3.10 Lessons Learned

The Evaluation Team proposes that the following lessons can be drawn from the mid-term evaluation:

- In a country where the means of the government technical services are extremely limited, one should not rely upon the government to carry on activities begun under a donor-assisted project after the end of donor funding. Therefore, the project needs to place maximum emphasis on local participation, introduction of innovations that villagers can replicate on their own, and work with local institutions and NGOs that can continue efforts after the project ends.
- For a project seeking to maximize local participation, it is important not only to seek the opinions of villagers and their participation in activities, but to more fully engage them in processes of assessment, planning, implementation, applied research, monitoring, evaluation, and adaption or updating of plans.
- In a project with complex social dynamics, such as where different ethnic groups, social classes and genders have differential tenure and usufruct rights, applied social science research on land tenure and other social factors may be essential for developing culturally-appropriate strategies for development. Therefore, adequate provision needs to be made in staffing, in terms of field staff, long-term technical advisors and short-term consultants.
- A pilot project should concentrate on the development of innovative, sustainable replicable approaches, and should not be overly concerned with impacts achieved during the life of project.
- While it is important to develop innovations that will be affordable and cost-effective for later replication, research and development costs may be considerable. It is therefore inappropriate to assess the cost-effectiveness of the pilot project activities in relationship to the number of direct beneficiaries.

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- Agroforestry always requires a significant applied research phase when beginning work in a new area because it always involves screening species for suitability to the local agro-ecological conditions.
- In designing a pilot project such as the GNRMP, one should not program the use of local counterpart (PL-480) funds for the funding of strategically critical activities, such as applied research contracts.
- One should not undertake a project whose purpose is increasing agricultural production without assuring that the requisite agronomic expertise will be available.
- Developing sustainable and profitable agricultural and natural resource management systems requires a concerted, continuing process of strategic analysis, planning, monitoring and evaluation. One must periodically reassess each project component in relation to its contribution toward purpose and outputs.
- As part of the overall strategic approach, a project must develop a well-integrated and participatory monitoring and evaluation system. This M&E system should assist villagers, staff, advisors, and sponsoring agencies in assessing whether or not the activities and strategies are producing the desired results, and what are trends in the long-term people-level and environmental impacts.
- Although pilot projects dealing with watershed management, sustainable land use and agricultural systems and enterprise development must focus on development of innovative approaches to natural resource management, the first and foremost emphasis should always be on development of human resources, building the capacity of local people to better manage their environments and develop their own lives.

4. PRINCIPAL RECOMMENDATIONS

4.1 Project Design

4.1.1 Revised goal and purpose

The Evaluation Team recommends that the goal and purpose of the project be restated as follows:

The goal of the GNRMP is to establish sustainable production systems in the Fouta Djallon Highlands that will conserve the natural resource base of the watersheds of the Fouta Djallon.

The purpose of the project is to develop pilot sustainable production systems in the Diaforé, Koundou and Dissa Watersheds for future adaption and extension to adjoining areas.

It is vital to remember the distinction between conservation and preservation. Conservation implies "wise and sustainable use" of the resource base. Without conservation of natural resources, it will be impossible to sustain production systems and the populations of the watersheds.

4.1.2 Strategic approach

Team-building workshop

Goal, purpose and outputs need to be unambiguously defined and agreed upon by all partners for successful project implementation, monitoring and evaluation. The Evaluation Team has recommended changes to goal and purpose and revisions to the logical framework. Therefore, it is critical all parties concerned address these issues and that everyone shares a common vision of the project's objectives and strategies, so that efforts can be better integrated.

USAID and its partners need first to address the Evaluation Team's first recommendation (4.1.1). If the proposed goal and purpose are adopted, the rest of the logical framework must be reviewed and revised for internal consistency. The Evaluation Team believes that the current outputs are more logically linked to the proposed goal and purpose than to the existing goal and purpose. If it is decided to retain the present goal and purpose, then the existing logical framework still needs to be closely reviewed, as the logical progression from Outputs to Purpose is highly tenuous (See Section 2.1.2).

The Evaluation Team suggests that a professionally-facilitated team building workshop, or closely spaced, consecutive series of workshops involving USAID, the technical assistance contractor, the DNFF, the WMU staff, Peace Corps and the Land Tenure Center may be an efficient way to proceed in resolving these questions. Although team-building efforts were undertaken at the beginning of the project, there has been substantial turnover in

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staff members. Review of the findings and recommendations of the mid-term evaluation should be an excellent occasion for a new team building exercise.

This workshop(s) should address the following issues:

- overall vision of project, its goal and purpose and outputs;
- the roles of the various partners in the project;
- key strategies for achieving outputs and purpose; and
- findings and recommendations of the mid-term evaluation.

Sustainability of land use systems

If the proposed goal and purpose are adopted, then it follows logically that the sustainability of the existing land use systems in the three watersheds must first be evaluated. The focus must be on agriculture, by far the dominant land use. Unsustainable components and their causes must be identified and prioritized. Then strategies and interventions that address the causes of unsustainability, or that provide completely different economic alternatives, must be elaborated.

Some land uses can never be made sustainable. In many cases, slash-and-burn agriculture is being practiced on steep slopes where annual cropping can probably never be sustained. In such cases, sustainable production systems must involve strategies for converting to land uses that entail permanent vegetative cover (tree crops, pasture, range or forest) or for developing economic alternatives for those who are presently reliant on slash-and-burn agriculture. This is where small-enterprise development must play a strategic role.

Present activities, such as development of water sources, road improvements, construction of schools and dispensaries, training of midwives, and environmental education, need to be reevaluated. Such activities have been viewed as accompanying activities, undertaken to entice the population to work with the project. These activities must be assessed in term of their strategic importance for developing sustainable production systems. This requires a long-term perspective. Is it conceivable that sustainable production systems can be achieved with an illiterate population, which lacks access to potable drinking water, primary health care, and adequate roads for transport of necessary inputs or goods to market?

4.1.3 Project components

The Evaluation Team recommends reorganizing the project outputs and activities into the following five components:

1. Strategic Planning, Monitoring and Evaluation
2. Sustainable Land Use
3. Enterprise Development
4. Community Organization, Education, and Training
5. Applied Research and Policy Analysis

4.1.4 Revised institutional roles

Technical Assistance Contractor

The Evaluation Team recommends that the following changes or clarifications be made to the Scopes of Work for the long-term advisors:

Chief of Party Beyond his duties as project manager, the COP should have the principal responsibility for strategic analysis, planning, monitoring and evaluation. He must assure that all partners are involved in this process. He must assure that all project strategies and components are developed in an integrated fashion to contribute towards achieving the project purpose. He should have principal responsibility for assuring that the M&E system is developed in a way to test the project's strategies and for assessing project impacts.

Agronomist The soil and water conservation position that is currently vacant should be changed to that of an agronomist. The agronomist should have expertise in market gardening, fruit trees, food crops and soil-fertility maintenance in the tropics. These skills are critical for small enterprise development and for the development of sustainable cropping systems. The agronomist should take over much of the market gardening work currently handled by the Community Enterprise Development Specialist, and should assist with soil-fertility conservation.

Agroforestry/Soil and Water Conservation Specialist The current agroforestry advisor position should be broadened to include soil and water conservation. The civil engineering and hydrological expertise needed for spring capping and improved wells should be separated from this position. (These skills should be hired locally, to be supplemented by outside STTA and/or training as necessary.) Both the agroforestry and soil and water conservation should be more strongly focussed on soil-fertility maintenance. A much greater emphasis should be placed on the use of non-woody perennial species for soil conservation, soil-fertility maintenance and forage production.

Chief Extension Advisor Due to the importance of gender issues, the head women's extension advisor should continue to work with the women extension agents in the three watersheds. But it is vital that her role be broadened beyond just working with women to encompass overall extension efforts.

The development of more participatory approaches for working with villagers will be key to the project's sustainability and success. This must involve all LTTA and all WMU staff, but someone needs to be given the lead responsibility. The head women's extension advisor is the logical candidate. The position should be called the Chief Extension Advisor.

The chief extension advisor should be responsible, with the help of STTA, for developing more participatory approaches toward natural resources management, production and enterprise development. The chief extension advisor should be closely involved in efforts

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to build local capacities for village-level natural resource management in two villages in each watershed.

Peace Corps

Although progress has recently been made in better defining the roles of PCVs in the project, this issue needs considerably more clarification in the very near future as the new trainees will be starting their training in June. The team building workshop(s) proposed above would be an excellent means for accomplishing this.

Peace Corps intends for the new volunteers to work on environmental education in the primary schools as their primary activity. The Evaluation Team supports this idea if the environmental education can focus on the real-life problems of unsustainable land use systems particular to each watershed, and if this environmental awareness can be tied into practical alternatives to the problems. The proposed focus on strategic analysis and planning should provide ready material for environmental education. Continued PCV involvement in primary school construction is desirable to the extent that the GOG can provide qualified teachers to staff the new schools.

The principal unresolved question seems to be the level of PCV involvement in other project activities, e.g., in agroforestry, soil conservation, agronomic, and natural resource management extension activities and small enterprise development. It has been proposed that the each new volunteer will spend time with each staff member in their watershed, before choosing a counterpart and an area of extension activity. Such extension work would then constitute a secondary activity for the volunteer.

The technical assistance contractor COP and Peace Corps Conakry staff should immediately address this question. Given the very limited human resources available in the WMUs, it is highly desirable that PCVs participate in extension to the extent that a viable niche can be defined for them in this field.

Land Tenure Center

Traditional land tenure presents one of the greatest constraints to the development of profitable and sustainable land use systems. The Land Tenure Center research and training in the three watersheds has been of high quality and has been greatly appreciated, but the results have been only partially exploited by the project.

The project should seek ways to further collaborate with LTC, to make better use of the research already completed. The Land Tenure Center could be involved in: (1) development of contracts or other mechanisms for improving resource management on exterior fields, fallows and other areas; (2) development of extension approaches with villagers concerning their rights under the new Land Code and upcoming *textes d'application*; (3) assisting with development of village management committee capacity for village-level resource management; or (4) an assessment of how land tenure has

affected participation in, and benefits derived from, project activities to date, and recommendations for improved strategies, to ensure more equitable participation.

4.2 Participation and Community Organization

A major challenge facing the project is the empowerment of local women and men, to better manage production systems and natural resources in the watersheds. The approaches employed must become much more participatory, to strengthen local capacities for decision-making, management and development, monitoring and evaluation. More villager involvement in applied research is needed.

A broader range of extension approaches and techniques should be employed, to better train villagers in natural resource management, agronomic and enterprise development skills, as well as skills in participatory management. The watershed staff need to focus on facilitation, helping villagers analyze and act upon their own development needs. Extension techniques that will encourage more interactive collaboration, such as those developed by GRAPP, or farmer study tours (to nearby areas where villagers speak the same local languages), should be more widely used.

PRA techniques should be used to work toward development of village-produced, project-assisted village resource management plans for at least two villages in each watershed. Development of co-management approaches for the Nialama Classified Forest should proceed only if USAID and GOG are willing to make a longer-term commitment to supporting these efforts.

Better use should be made of work already done by the Land Tenure Center on the complex social dynamics in the watersheds, particularly with respect to tenure, ethnicity and social class, gender, and social organizational issues. The project staff should work to promote social equity and should periodically evaluate the effect of their activities in this regard.

The project should make greater use of local non-governmental organizations for training of watershed residents and extension of introduced technologies. This collaboration is especially important for testing and developing NGO capacities for potential roles in the future.

Support to primary education, environmental education, and adult functional literacy and numeracy should be seen as integral to developing local capacities to better manage natural resources, develop enterprises and ensure long-term sustainability. Work with economic (income-generating) groups should further develop their capacities for feasibility studies, management, and use of credit to ensure that they can obtain reasonable returns on their production and enterprise activities.

4.3 Sustainable Land Use Systems

The project must focus primarily on improving the sustainability of agriculture. This focus requires improving and maintaining the fertility of agricultural soils. Soil-fertility maintenance requires efficient use of nutrients available, replacement of nutrients that are inevitably lost, effective control of erosion, and maintenance of soil organic matter. In order to replace nutrients lost over time, especially phosphate, agriculture must become a much more commercialized, market-oriented venture. Much greater emphasis must be placed on developing and extending suitable agronomic technical packages, with a particular emphasis on cash crops.

To the extent possible, agricultural intensification should be concentrated on the best, deepest soils with the gentlest slopes. On steep, marginal sites where annual cropping cannot possibly be sustained over time, strategies for conversion to other land uses that involve permanent vegetative cover must be promoted, or completely different economic alternatives must be developed for farmers reliant on these unsustainable systems.

Agroforestry, soil conservation and agronomic techniques need to be more strongly focussed on soil-fertility maintenance. Direct seeding trials of nitrogen-fixing shrubs for improved wooded fallows needs to receive particular emphasis. Much more use of herbaceous plantings on contours, especially of forage species, for erosion control needs to be tested and extended. Local expertise should be sought for spring capping and improved well development.

Village-based NRM should be developed in two villages per watershed and should concentrate on communally-held resources, especially range and forest resources. Fire management should be seen a strategic community-based management tool for managing range, forest and fallow lands and for managing watershed recharge areas.

More detailed recommendations are found in Section 3.3.

4.4 Enterprise Development

Agriculture is the mainstay of the economies of the three watersheds and will remain so in the foreseeable future. A much greater development of commercial, market-oriented agriculture is key to the ecological sustainability of agriculture. Small enterprise development should concentrate on the production, marketing, and secondary transformation of cash crops.

Dry-season market gardening should continue to be an key focus area. An inventory of water and suitable land resources should be conducted. Measures to avoid overclearing of riparian vegetation need to be developed. Village management of water recharge areas for dry-season water sources needs to be linked to market garden development. Marketing studies being carried out by USAID's Agricultural Marketing Investment Project (AMIP) on the principal market garden products (onions, potatoes, tomatoes, etc.) should be provided to GNRMP staff as soon as possible.

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Much greater access to credit and more appropriate conditionalities for repayment of credit will be needed for enterprise development. The project needs to absorb a significant portion of the costs of promoting new, unproven enterprises. A closer analysis of profitability of enterprises promoted needs to be made. Promotion of enterprises of marginal profitability should be dropped.

Individual enterprises should always be supported over community or group enterprises, except when there is a clear-cut advantage to the latter. Enterprise development staff need to spend considerably more time outside of the watersheds gathering marketing information and making contacts needed for marketing and enterprise development. Improvement of the Tougué-Diaforé Road is critical to enterprise development in Diaforé watershed.

More detailed recommendations for enterprise development are provided in Appendix 3.

4.5 Training and Short-Term Technical Assistance

Training for the WMU staff needs to be planned in a more systematic, participatory fashion, beginning with a training needs assessment. A training needs assessment will require that an agreed-upon Scope of Work (SOW) first be finalized for each WMU employee. The DNFF should finalize SOWs as a prerequisite for further training for WMU staff.

The technical assistance contractor COP should develop a formal methodology for conducting the needs assessment jointly with each WMU director. The SOW for each employee should be compared against the employee's training, experience and capabilities. The gap between capabilities and SOW should define the training needs. An overall training needs assessment report should be completed for the three WMUs, and should serve as the basis for the preparation of a training plan. The plan should be developed collaboratively by the technical assistance contractor, the national (and regional) DNFF coordinators, and the WMU directors. WMU staff members should have an opportunity to critique the draft before it is finalized.

Training and technical assistance are inherently linked. As the Guinean staff is provided training, including on-the-job training, and gains experience, then its need for outside expertise decreases. A much greater emphasis should be placed on using short-term consultants in the training of local staff. Areas in which additional training are needed are indicated in Table 4 (Section 3.4).

The Evaluation Team does not wish to tie the hands of the project by prescribing a fixed list of STTA needs. The Team does suggest that the following STTA be given close consideration:

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- A very senior land use and agroforestry specialist to assist in the diagnostic of the sustainability of land use systems and to refine strategies for the roles of agroforestry, soil conservation, agronomy, and animal husbandry in the development of sustainable systems;
- A sociologist skilled in the use of PRA in support of the development of village-based natural resource management plans;
- Local civil engineer and hydrologist for the proper design of capped springs and improved wells;
- A fire and range management specialist to advise on village-based fire and range management strategies, with a particular emphasis on watershed recharge;
- A credit specialist to develop an effective strategy for the proper use of credit for enterprise development;
- Applied social and biophysical scientists with expertise in sampling methodology, survey design and selection of cost-effective, efficient socioeconomic and biophysical indicators as needed for the M&E design; and
- Local agronomists as needed for the development of improved agronomic packages for cash crops.

4.6 Applied Research

Applied research should be focussed on soil-fertility improvement and maintenance, on improved species and varieties of cash crops and on appropriate agronomic techniques for their production. A particular emphasis should be placed on testing, demonstrating and extending the environmentally-sound use of chemical phosphate fertilizers, because a large percentage of the soils are critically deficient in this essential nutrient.

The applied research needs should be defined from input from villagers, WMU staff, LTТА and STТА and other partners. The Evaluation Team proposes that the following applied research topics be given priority consideration:

- screening of species and varieties of market garden crops and other cash crops in each watersheds;
- development of appropriate agronomic technical packages for market crops;
- testing of appropriate chemical fertilizer and phosphate application for cash crops;
- screening of herbaceous and agroforestry species (especially forage species) for use in contour vegetation bands for erosion control; and
- testing of improved wooded fallow species, and green manure species and techniques for soil-fertility management in tapades, exterior fields, and dry-season garden sites.

The project should award contracts for applied research to institutions and/or individuals based on their performance. The technical assistance contractor should not be locked into contracting with a given institution if they do not perform satisfactorily. The researcher needs to display academic rigor, professional follow-up, and timely reporting.

4.7 Policy Analysis

Proposals for further funding of the Land Tenure Center to complete the proposed land tenure case studies and work on policy reform should be supported. If possible, the Land Tenure Center should be asked to assist the watershed staff in finding ways to encourage land users and land owners to make long-term investments in soil conservation and natural resource management in exterior fields and communal resource areas in the pilot watersheds.

With respect to other policy studies, it would be most suitable for the project to restrict its efforts to activities that will directly affect interventions in the watersheds. The Evaluation Team does not believe that the project should be undertaking broad policy studies with respect to gender issues, access to outside markets, or sustainability in natural resource management.

If the project goes ahead with studies relating to national forest policies or changing the institutional role of the DNFF (as proposed under policy studies relating to sustainable natural resource management), it might be most appropriate for such studies to be undertaken through the Land Tenure Center.

4.8 Monitoring and Evaluation

Monitoring and Evaluation should be developed first and foremost as an internal management tool to be used by the project to determine whether or not the project activities are resulting in the desired objectives. The M&E system should be designed for testing the strategies, assumptions and hypotheses that have been developed for achieving project goal and purpose.

Based upon the overall project objectives and the strategies elaborated for achieving them, the technical assistance staff must make the key decisions on what needs to be assessed, monitored and evaluated for testing these strategies. The TA team needs to define jointly with USAID the key elements to be monitored for effective reporting to Congress on project impacts. After these basic decisions are made, then outside short-term technical assistance may be needed to assist with issues of sampling methodology, survey design, and cost-effective indicators for environmental and socioeconomic factors.

The Evaluation Team recommends that the baseline household survey, in its current form, should not be used.

More detailed recommendations for the M&E system are provided in Appendix 4.

4.9 Linkages with USAID and Other Donor Projects

The Evaluation Team recommends that closer linkages with other USAID programs be pursued. The GNRMP should develop close linkages with the USAID Agricultural Marketing Investment Project (AMIP). Marketing studies currently being carried out by

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AMIP on market garden products should be made available as early as possible. The planned collaborative study with PRIDE on the identification and support for non-agricultural and individually owned enterprises should be followed up with continuing collaborative efforts on how to best support this type of enterprises.

Both direct and indirect support from the Rural Roads Project should be closely pursued. Upgrading the Tougué-Diaforé Road is critical. Although this does not fall directly under the mandate of the Rural Roads Project, the project personnel should use their contacts within the government ministries to prioritize this needed work.

The project should maintain a dialogue with USAID's primary education, family planning and local governance programs to share information and resources as appropriate. The primary education project should be able to provide a good assessment of the GOG's ability to staff new schools that may be proposed for the watersheds.

Through its provision of potable water, general extension efforts, and the work of Peace Corps to train village-level midwives, the GNRMP supports community health issues and encourages watershed residents to use local health services. USAID's family planning project staff may be able to suggest culturally-sensitive ways to raise awareness of family planning issues among watershed residents.

Support for village-based resource management is support for local governance. Similarly, the project's work with women's groups, other villager groups and local organizations, including CRDs, can strengthen local capacities for decision-making and participation in civic life. USAID's democratization and governance program should follow the GNRMP experience closely.

Much more exchange should take place between the GNRMP and other donor projects that are dealing with NRM, agricultural and small enterprise development and local-capacity building. The GOG has not developed the effective coordination between the pilot watershed projects that was foreseen in the first phase of the umbrella project. The technical assistance team should take the initiative to renew contacts and to schedule field visits as appropriate to other projects of interest. Where possible, collaboration with other projects should extend beyond exchange of information to joint activities, such as training workshops.

Of particular interest is the year-old Upper Gambia Watershed Management Project. It has opted for an innovative, low-input participatory approach, with no project staff based in the field. It works through contacts with key villagers identified in the different watersheds and local NGOs. This project's experience may be valuable to GNRMP, in suggesting ways of increasing NGO involvement and promoting long-term sustainability of project initiatives by villagers.

4.10 Project Management

USAID

USAID should deal immediately with the Evaluation Team's recommendations concerning project goal, purpose and the internal coherency of the logical framework. The Evaluation Team recommends that these issues be dealt with, at least in part, through a professionally-facilitated workshop or series of closely spaced workshops (See 4.1). This team-building seems particularly important given the major turnover in USAID staff, within the TA team, and among the Peace Corps volunteers. It should be an excellent way to review the findings and recommendations of the mid-term evaluation.

USAID's project management should concentrate on the "big picture" issues that concern the project and make efforts to devolve more responsibility to its partners for the day-to-day implementation. USAID's primary concerns should be to assure that all project components and partners are working together in a strategic fashion towards the achievement of goal and purpose. USAID should play an oversight role, to ensure that the project is progressing toward its objectives and that USAID requirements and procedures are followed.

Consistent USAID/GOG/project policies should be adopted regarding grants, subsidies, and use of inputs, such as pesticides and fertilizers. The situation needs to be clear to everyone as to what activities constitute demonstrations, wherein the project will absorb some of the costs or risks, versus general approaches for extending interventions, e.g., rock lines, cookstoves, etc.

The Evaluation Team believes that, as a pilot project, costs must be assessed in relation to the innovations developed and new technologies introduced. USAID should recognize that many of the technological interventions needed to are not available "off-the-shelf," but require, instead, a significant program of applied research.

USAID should be more concerned with the process of creating the enabling conditions for the adoption of sustainable production systems than with short-term measurable results. This is especially true for soil-fertility maintenance and agroforestry technologies, which invariably involve testing potential species for their suitability for integration into the natural and cultural conditions.

While cost efficiency is important, USAID should not sacrifice quality for economy. Thus, low cost should not be a major criterion in the approval process for technical assistance and other inputs needed for the development of sustainable systems.

Technical Assistance Team

The technical assistance team needs to place a much greater emphasis on developing, in collaboration with all its partners, coherent strategies for linking project activities with project goal and purpose. Every current or proposed intervention should be assessed in terms of its strategic importance in contributing to goal and purpose.

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The technical assistance team should work with the DNFF to develop a performance-based incentive structure for all WMU staff.

The technical assistance team should place a greater emphasis on involving the WMU staff in the development of training needs assessment, training plans, applied research planning and in the design and implementation of the M&E system.

The COP should continue to facilitate the integration of the new Peace Corps Volunteers (PCVs) into the project, and ensure that their roles are clearly defined and understood by all parties.

Direction Nationale des Forêts et de la Faune

The DNFF should fill the post of Regional Coordinator for Labé as quickly as possible.

The National and Regional Coordinators should work with the technical advisors to develop a performance-based incentive system for WMU staff. Scopes of work should be completed for all WMU staff and should serve as a basis for a training needs assessment.

The women extension agents in the watersheds need to have a clearly defined area of technical responsibility. They are working with women on agricultural production and enterprise development, as well as mobilizing women for participation in community efforts on natural resource management. As much of their work is with women on market gardening, perhaps they should be given the lead responsibility for serving as the watershed agronomists.

In each watershed, it will also be important to decide which staff member will be responsible for working with the Chief Extension Advisor on promoting village-level resource management, and supporting the village committees, and working with the local officials, CRDs, etc.

The DNFF needs to be involved in the development of the project's monitoring and evaluation system. As the system is better defined, DNFF needs to assign someone to work on the M&E system.

The National Coordinator should negotiate reasonable conditions for access to the documentation center in Labé, which was compiled by the Phase I Fouta Djallon Integrated Rural Development (RAF) Project. The National Coordinator should insure that the aerial photographs (1980's, 1970's & 1950's) and 1:5000 scale topographic maps already assigned to each WMU are made readily available for use by WMU technicians, the technical advisors and other collaborators.

Peace Corps

The Peace Corps needs to further clarify the roles of the next group of volunteers. Peace Corps Conakry should work closely with the technical assistance contractor COP on this issue.

4.11 Potential Expansion of Project Area

The Evaluation Team does not recommend any significant expansion of the project beyond the present three watersheds at this time. There is still a tremendous amount of work to do to develop profitable and sustainable agricultural and natural resource management systems in the watersheds. Expansion into new geographic areas risks to dilute the effort needed.

The project should seek to develop expanded roles for NGOs during the remaining life of the project, especially in view of testing their capabilities for a much expanded role in a subsequent phase. A possible exception to geographic expansion could involve a subcontract with an NGO for testing their capabilities. Thus, an NGO could be contracted to provide extension services, for extending project activities into a new area of limited extent. For example, an NGO could be asked to extend project interventions to villages that are located in Diaforé Sous-Prefecture, but lie outside of the watershed boundaries.

4.12 Beyond Project Assistance Completion Date (PACD)

The Evaluation Team recommends that USAID continue the GNRMP into a second phase if some or all of the following conditions are met:

1. The enterprise development component continues to develop favorably, and this can be shown to result in a reduction in unsustainable land uses.
2. The project makes real progress in improving the sustainability of the agricultural systems.
3. Some portion of the interventions can be shown to be maintained and/or extended by villagers without project assistance.
4. Some of the village management committees display enhanced capabilities for initiative in confronting and resolving their own problems and in managing common resources.

If there is a Phase II, serious consideration should be given to reducing the geographic areas to one or two of the three present areas to reduce the logistical travel constraints. Of the geographical sites retained, the present watersheds could serve as demonstration sites for farmer visits and as operational centers for geographically expanded operations to contiguous areas.

Appendix 1. Scope of Work for Mid-Term Evaluation

IQC No. LAG-4200-I-00-3059-00

Delivery Order No. 10

ARTICLE I - TITLE

Funding Title and Number: Guinea Natural Resources Management Project,
No. 675-0219

Title of Work: Mid-Term Evaluation of the Guinea Natural
Resources Management Project

ARTICLE II - OBJECTIVE

A. Background

In order to assist the Government of Guinea (GOG) in improving the management of natural resources for sustainable agricultural production in the Fouta Djallon Highlands, USAID has been funding the Guinea Natural Resources Management (GNRM) project since 1992. This project is an integral but free-standing component of the implementation phase of the multi-donor Fouta Djallon Highlands Integrated Rural Development (FDHIRD) Project initiated by the GOG. The objective of the FDHIRD Project is to ensure the rational use and protection of the natural resources in the Fouta Djallon Highlands, and to improve the living conditions of its people as well as the people living in countries neighboring Guinea and dependent on rivers for irrigation which originate in the Fouta Djallon Highlands. The FDHIRD Project is a three phase project; Phase-1, completed in 1988, consisted of baseline surveys, studies, and demarcation of twelve paired pilot watersheds. Phase-2, now in progress, is an action phase in that project activities will begin in targeted watersheds. Phase-3 will concentrate on replicating and extending successful Phase-2 interventions into the rest of the watersheds in the Fouta Djallon Highlands and other areas in Guinea. The USAID-funded GNRM Project is a part of the FDHIRD phase-2 interventions, is being implemented in three of the twelve paired watersheds in the Fouta Djallon Highlands.

The goal of the GNRM Project is "to increase sustainable agricultural and value-added production by men and women for domestic and export markets." The project purpose is "to improve the management of natural resources for profitable and sustainable agricultural production in three watersheds of the FDH." The Project consists of six components: (1) Natural resource management; (2) Applied Research; (3) Enterprise development and management; (4) Training; (5) Policy analysis; and (6) Impact monitoring and evaluation.

The implementation of the GNRM Project began in November 1992 by a four-member, long-term technical assistance (TA) team provided by Chemonics International in collaboration with the GOG National Directorate of Forests and Wildlife (DNFF), under the Ministry of Agriculture, Animal Resources and Forests. The TA team consisted of a

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team leader, an agroforester, a soils/water specialist and a community enterprise development specialist. After an internal assessment of the Project conducted in February 1994, the soils/water specialist position was changed into a production agronomist position and a national women development specialist was added to the team. The TA team is based in Labé, the regional capital of Middle Guinea, about 400 km from the national capital, Conakry.

In addition, as land tenure issues and GOG policies were identified during the design phase of the GNRM Project as a constraint to natural resource management practices, the University of Wisconsin Land Tenure Center (LTC) has been contracted to provide a specialized research/technical assistance team to evaluate GOG national land, forestry, and environmental codes and study local land tenure and resource management customs related to tenancy issues in the three target watersheds. The LTC team has also engaged in policy dialogue with the GOG concerning the implementation of the recently enacted Land Tenure Code and disseminate the findings of its research to GOG officials and field agents.

B. Objective

The purpose of this Delivery Order is to procure a mid-term evaluation of the Guinea Natural Resources Management (GNRM) Project.

This evaluation shall focus on (1) the progress to date in achieving the project's outputs and purposes, (2) the appropriateness and effectiveness of the interventions undertaken by the project, (3) the validity of the project assumptions, (4) the provision and quality of project inputs, (5) the role of the GOG in the implementation of the project, (6) the management role of USAID/Guinea in achieving the project goal and purpose, (7) the sustainability of the project, and (8) the modification, if necessary, in the goals, purposes, outputs and inputs of the project. The evaluation shall also assess the extent to which gender concerns have been taken into account in the design, implementation and evaluation of the NRM project.

ARTICLE III - STATEMENT OF WORK

A. Statement of Work for the Evaluation Team

The evaluation team, consisting of an environmental specialist (team leader), an agroforester, an agricultural economist, and a social scientist, shall be responsible for the evaluation of the GNRM project, and the elaboration of a complete evaluation report which addresses adequately all the tasks listed below.

Specifically, the evaluation team shall:

- (1) Measure planned versus accomplished or achieved in terms of inputs and progress towards achieving the outputs, purpose(s) and goal(s) of the project;

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- (2) Reassess the relevance of the project's goals and purposes with specific reference to both the GOG's and USAID/Guinea's development strategy. If necessary, recommend modifications in the goal(s), purpose(s), outputs and inputs in the project;**
- (3) Assess the project's environmental, social and economic impacts on the target beneficiaries and determine the validity of the indicators selected for the measurement of the achievement of the project's objectives and impact;**
- (4) Assess the quality, adequacy and effectiveness of the technical assistance provided by the implementing contractor, and the long-term TA levels required in the remaining years of the project and recommend ways and means of improving the cost-effectiveness of TA in terms of overall project sustainability;**
- (5) Evaluate the effectiveness, appropriateness and sustainability of the interventions and associated activities undertaken by the project, and the overall cost of the project in terms of potential benefits to be accrued to the beneficiaries, area and population served and its long-term sustainability post-project and recommend steps to improve overall cost-effectiveness and sustainability;**
- (6) Review the assumptions made during the design of the project and assess their continued validity;**
- (7) Identify the strengths and weaknesses in the management of the project in the field as well as in the collaboration between the technical assistance team, GOG technicians and Peace Corps volunteers, and make recommendations for improvement;**
- (8) Review the GOG's role in the implementation of the project and evaluate its effectiveness, including the provision of counterpart funds, and assess its capacity to continue the promotion of successfully proven interventions in the three pilot watersheds and/or to replicate them in other watersheds in the Fouta Djallon Highlands with little outside technical and financial assistance after the termination of the current project;**
- (9) Evaluate the effectiveness of USAID/Guinea's management role;**
- (10) Determine if resources are being efficiently utilized for the implementation of the project. If the determination is negative, recommend a modality to increase efficiency, including modifications to the project's strategy, scope and structure;**
- (11) Formulate a strategy for USAID/Guinea to link the NRM project with other USAID-funded projects and programs so that resources would be utilized more efficiently in achieving the Mission's strategic objectives;**
- (12) Review the activities of PVOs and indigenous NGOs in Guinea, ascertain how they relate to the GNRM project and recommend how PVOs and NGOs might be linked to USAID/Guinea's present and future NRM activities;**

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(13) Respond to the following questions pertaining to the gender issues: (a) How were the interests and roles of women taken into account in each of the design, appraisal and implementation stages of the GNRM project? (b) In what ways have women participated in these processes? (c) What are the effects, positive or negative, of the project concerning women's access to income, training, markets and improved natural resource management practices; and with respect to workloads and role in household, farming and community activities? (d) Were gender-specific data available on various project interventions to assess women's participation? (e) How does women's integration in NRM activities affect the sustainability of project outcomes? (f) Are the results achieved by the project equally sustainable between men and women beneficiaries?; and

(14) On the basis of the findings and analysis related to the above tasks, draw conclusions, describe lessons learned, and make recommendations with respect to the improvement of project implementation, sustainability, and efficiency.

B. Statement of Work for Team Member: The Environmental Specialist (Team Leader)

The Environmental Specialist shall, under the technical direction of the USAID/Guinea Rural Development Officer, be the team leader and be responsible for the overall management of the contract team's efforts. Specifically, he shall:

- (1) Coordinate and supervise the activities of team members including review of documentation, interview of appropriate people, analysis, formulation of recommendations, and drafting the evaluation report;
- (2) Establish the team work plan and a work plan for each of the team members within three days after arrival in Guinea;
- (3) Address issues related to the environmental aspects of the project such as measurement of impact on the environment, appropriateness and viability of the project interventions, etc;
- (4) Address institutional and legal issues pertaining to natural resources management that may affect the project and recommend approaches to address these issues;
- (5) Reassess the relevancy of the project's goals and purposes with reference to the GOG's and USAID/Guinea's development strategy;
- (6) Assess the effectiveness, efficiency and relevancy of the project's training activities;
- (7) In collaboration with other team members, review the validity and reliability of the indicators for measuring the achievement of the project's outputs and purposes;
- (8) Evaluate the effectiveness of the GOG's role in the implementation of the project;

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- (9) Evaluate the effectiveness of USAID's management role;
- (10) Evaluate provision of inputs to the project by the implementing contractor, GOG and USAID, focusing on the quality of the inputs and the timeliness of their delivery;
- (11) Formulate the linkage of the project with other USAID-funded projects and programs;
- (12) Ensure that all the tasks required of the team are satisfactorily accomplished; and
- (13) Complete and submit the final draft of the evaluation report and the project Evaluation Summary (PES), in accordance with ARTICLE IV - REPORTS, to USAID/Guinea before departure from Guinea.

C. Statement of Work for Team Member: The Agroforester

The Agroforester shall:

- (1) Assess the overall soundness of the approach and the effectiveness of activities undertaken to promote rational natural resource management with regard to soil, water and forest conservation and utilization, and recommend steps for improvement;
- (2) Evaluate the effectiveness, appropriateness and replicability of interventions undertaken in the domains of agroforestry, forestry, soil and water conservation and utilization;
- (3) In collaboration with other team members, determine the impact and the sustainability of these interventions in terms of environmental soundness, economic viability and social acceptance;
- (4) Recommend approaches to maximize impact and enhance sustainability;
- (5) Assess the follow-on steps taken by long-term TA to implement the short-term TA's recommendations and their impact in the domain of agroforestry, soil and water conservation and crop production;
- (6) Recommend interventions that have proven successful in other countries and that could be applied to Guinea;
- (7) In collaboration with the Environmental Specialist, formulate the linkage of the GNRM Project with other USAID-funded projects and programs.

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D. Statement of Work for Team Member: The Agricultural Economist

The Agricultural Economist shall:

- (1) Assess the overall soundness of the approach and effectiveness of activities undertaken to promote income generating activities and/or private sector-based NRM activities in the watersheds, and their impact to date, and recommend steps for improvement;
- (2) Evaluate the effectiveness, appropriateness and replicability of the small enterprise interventions undertaken by the project;
- (3) In collaboration with other team members, determine the impact and sustainability of these interventions in terms of environmental soundness, economic viability and social acceptance;
- (4) Recommend strategies to maximize impact and enhance sustainability;
- (5) Assess the effectiveness of the project's current policy regarding credit and recommend how to improve it;
- (6) Assess the follow-on steps taken by long-term TA to implement the short-term TA's recommendations and their impact in the domain of small enterprise development;
- (7) Identify major constraints to the development of small private enterprises in the target watersheds in general and to women's participation in small business enterprises in particular, and recommend how to address these constraints;
- (8) Recommend private enterprise interventions that have proven successful in other countries and that could be applied to Guinea;
- (9) In collaboration with the Environmental Specialist, formulate the linkage of the GNRN Project with other USAID-funded projects and programs.

E. Statement of Work for Team Member: The Social Scientist

The Social Scientist shall:

- (1) Evaluate the collection of social and economic data, focusing on the usefulness and reliability of the data in assessing the project's impact and sustainability;
- (2) Identify the social factors that may have affected the progress of the project and make recommendations to overcome or alleviate their adverse effects;

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- (3) Evaluate the effectiveness and efficiency of the process of technology transfer and information dissemination carried out by the project;**
- (4) Evaluate the functionality and sustainability of resource user groups formed in the three watersheds;**
- (5) Assess the people-level impact of the project;**
- (6) Survey the activities of NGOs and PVOs in Guinea and make recommendations regarding the linkage of PVOs and/or NGOs to present and future USAID NRM activities;**
- (7) Respond to the questions pertaining to the gender issues listed in the statement of work for the evaluation team.**

ARTICLE IV - REPORTS

No later than three days after the team's arrival in Guinea, the contractor shall present to the USAID/Guinea Rural Development Officer (RDO) a detailed outline of the evaluation report and a team work plan including writing assignments for each team member. The outline shall be based on the discussions between the Team Leader and the RDO and on the statement of work described above plus any needed adjustments.

At least three days before the departure from Guinea of team members other than the team leader, the team leader shall submit a draft report in English including major findings, conclusions and recommendations and a French translation of the Executive Summary and Recommendations to the RDO. The RDO will set a date for the team's oral debriefing on the draft report, at which time USAID/Guinea, the GOG and the implementing contractor will provide comments to be incorporated in the final draft of the document.

Prior to his departure, the team leader shall submit the final draft of the evaluation report, including its annexes and a draft of the Project Evaluation Summary shall be submitted to the Rural Development Officer. The final draft report shall be typed in single space and in English. A diskette containing the files and using Word perfect 5.1 shall be submitted together with the draft final report.

The final evaluation report shall be sent to USAID/Guinea, via a worldwide courier service such as DHL, not more than two (2) weeks for the English version and four (4) weeks for the French version after the team leader's departure from Guinea. The document, including its annexes, shall be typed in single space and submitted in 10 copies in English and 10 copies in French together with diskette(s) containing the files for both versions, using Word Perfect 5.1.

ARTICLE V - TECHNICAL DIRECTIONS

The evaluation team shall work under the technical direction of the USAID/Guinea Rural Development Officer. USAID may provide a resource person to work with the evaluation team. The evaluation leader will coordinate all field logistics and schedules with the TA Chief of Party. All coordination with the GOG will be done through the RDO. Periodic meetings between the RDO, Project and Program Development Officer and the evaluation team will be held for progress monitoring or making changes in the work plan, the report outline, or the report itself. Final approval of deliverables rests with the USAID Program Office.

ARTICLE VI - TERMS OF PERFORMANCE

- A. The effective date of this Delivery Order is April 6, 1995 and the estimated completion date is July 5, 1995. The team is expected to spend at least two full working days in each watershed.
- B. Subject to the ceiling price established in this Delivery Order and with prior written approval of the Project Manager (see Block No. 5 on the Cover Page), contractor is authorized to extend the estimated completion date, provided that such extension does not cause the elapsed time for completion of the work, including the furnishing of all deliverables, to extend beyond 30 calendar days from the original estimated completion date. The contractor shall attach a copy of the Project Manager's approval for any extension of the term of this Delivery Order to the final voucher submitted for payment.
- C. It is the contractor's responsibility to ensure that the project Manager approved adjustments to the original estimated completion date do not result in costs incurred which exceed the ceiling price of this Deliver Order. Under no circumstances shall such adjustments authorize the contractor to be paid any sum in excess of the Delivery Order.
- D. Adjustments which will cause the elapsed time for completion of the work to exceed the original estimated completion date by more than 30 calendar days must be approved in advance by the Contracting Officer.

ARTICLE IX - USE OF GOVERNMENT FACILITIES AND PERSONNEL

- A. The contractor, and any employee or consultant of the contractor, is prohibited from using U.S. Government facilities (such as office space or equipment), or U.S. Government clerical or technical personnel in the performance of the services specified in the Delivery Order, unless the use of Government facilities or personnel is specifically authorized in the order, or is authorized in advance, in writing, by the Contracting Officer.

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- B. If, at any time, it is determined that the contractor, or any of its employees or consultants, have used U.S. Government facilities or personnel without authorization, then the amount payable under the contract shall be reduced by an amount equal to the value of the U.S. Government facilities or personnel used by the contractor, as determined by the contracting officer.**
- C. If the parties fail to agree on an adjustment made pursuant to this clause, it shall be considered a "dispute" and shall be dealt with under the "Disputes" clause of the contract.**

ARTICLE X - DUTY POST

The duty post for this delivery order is Conakry and Labé in Guinea and in three watersheds targeted under the GNRM Project.

ARTICLE XI - LANGUAGE REQUIREMENTS

The Specialist shall have English and French language capability at S-3 and R-3 levels.

ARTICLE XII - ACCESS TO CLASSIFIED INFORMATION

The Specialist shall not have access to classified information.

ARTICLE XIII - LOGISTICAL SUPPORT

USAID/Guinea will provide transportation from and to the airport in Conakry. Depending on availability of vehicles, the project, with assistance from the Project Management Unit in Labé, will provide transportation outside Conakry. The contractors, therefore, should be prepared to rent vehicles for transportation in Conakry and possible outside Conakry.

USAID/Guinea will not provide office space, the contractors, therefore, may consider renting office space at a hotel in Conakry.

Since contractors will not have access to Mission computers or typewriters, they must bring their own laptop or notebook computers (Electricity in Guinea is 220-230V/50Hz). USAID will make available a computer and printer for the purpose of printing the draft documents from 3.5" or 5.25" diskettes. USAID's computer hardware is compatible with WordPerfect 5.1, 5.2 and 6.0, Lotus 1-2-3, and DBase IV.

The contractors will have access to the USAID cashier for limited check cashing privileges and to the Embassy health unit. Access to the Embassy Health Clinic is limited to U.S. citizen and only life-threatening emergencies and requires that the contractor present proof of medical clearance issued by a certified physician. Each contractor must get medical evacuation insurance and all necessary immunizations before his/her departure for Guinea.

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Mission must cable or fax specific authorization for each contractor to enter Guinea with the planned date of arrival and departure. Contractors must have Guinean entry visas before they are authorized to travel. If contractors desire expediter assistance, Mission must have received request three work days (Monday through Friday) in advance of arrival in Guinea.

The contractors shall be responsible for all other logistical support not mentioned above.

ARTICLE XIV - WORK WEEK ORDERED

A six-day work week is authorized for the Specialists with no premium pay.

ARTICLE XV - EMERGENCY LOCATOR INFORMATION

The Contractor agrees to provide the following information to the Mission Executive Officer on or before arrival in Guinea of every contract employee or dependent:

- A. The individual's full name, home address, and telephone number, including any after-hours emergency number(s);
- B. The name and number of the contract, and whether the individual is an employee or dependent. Also, the name and phone number of the staff member having administrative responsibility for the contract;
- C. The name, address, and telephone number(s) of at least two of the individual's next of kin, and;
- D. Any special instructions pertaining to emergency situations, such as power of attorney designees or alternate contact persons.

END OF DELIVERY ORDER NO. 10

Appendix 2. Project Design and Logical Framework

A.2.1 Critical Review of the Design Process

A. 2.1.1 Development of the overall project for the Fouta Djallon

As the project was intended to form part of a larger multi-donor program, it is useful to review the original approach and concept. A more detailed discussion of the early ideas is provided in the project's pre-feasibility study.⁵

The Fouta Djallon massif has long been considered the "water tower" of West Africa, as the origin of sources of some of the most important rivers in West Africa -- the Senegal/Bafing, Gambia, and Niger. As early as the 1940s, concern was expressed over the erosion in the Fouta Djallon.

In 1981, the Organization of African Unity (OAU) began working with the Government of Guinea (GOG) to develop the Integrated Management of the Fouta Djallon Watershed (IMFDW) Project. The project was funded by UNDP and UNSO, and was considered to be a regional African project, RAF/081/060. Technical assistance was provided by FAO. The project received US \$ 1 million in funding, from 1984 to 1987, to prepare baseline studies and maps, and to develop the overall approach for subsequent work.

During this initial phase, the Government of Guinea created the Fouta Djallon Highlands Restoration and Integrated Development Service (FDHRIDS), which was to be a regional technical service. Thirty-five GOG technicians were assigned to the FDHRIDS. They served as counterparts to the RAF Project. The aim was to document and compare pilot interventions in the different watersheds. The long-term goal was to identify the most promising interventions, for future replication on a broader scale in Guinea and in neighboring countries. As part of this objective, the RAF Project established a documentation and map center in Labé.

The RAF project drew up a plan to conduct interventions in 12 pairs of watersheds. For each pair of watersheds, the original idea was that interventions would be developed in a representative pilot watershed, and compared with results in a similar control (*temoin*) watershed. The general approach advocated for each project was to begin with a six-month study of local conditions and the priorities of local residents.

In 1987, the Government of Guinea invited different donors to fund interventions in the 12 pairs of watersheds for a 5-year period. The estimated cost was projected to be approximately US \$ 2.0 - 2.5 million per watershed. Twelve male GOG technicians working for the FDHRIDS were designated as watershed directors.

⁵. Heermans, John and Paula J. Williams. 1988. Natural resource management in the Fouta Djallon Watershed, Guinea: a pre-feasibility study conducted for the U.S. Agency for International Development. International Institute for Environment and Development-North America, A Center of the World Resources Institute, Washington, DC.

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Coordination for the overall project was to be provided through an interministerial committee, and a Coordination Unit (*cellule de coordination*) at the headquarters of the National Direction of Forests and Hunting (Direction Nationale des Forêts et de la Chasse, DNFC). The OAU designated a Coordinator, to facilitate coordination with neighboring countries and the donor community.

Projects for the different watersheds began at different times. Consequently, the anticipated exchange of experiences among projects has been limited. Furthermore, a planned second phase of the RAF Project, to continue baseline studies and support the documentation center, was never funded. The idea of following paired watersheds (i.e., matching each pilot watershed with a control watershed) has not been pursued.

Since the FAO Project in Guètoya ended in 1992, the Government of Guinea has not had funds to maintain operations, although it still has some technicians assigned to this watershed. The first phase of the French-supported interventions, to Bafing and Balé watersheds, has ended. A second phase, entitled the Management of Rural Spaces and Forests (Gestion des Espaces Rurales et Forêts, GERF), has begun: it has expanded beyond the original watershed limits, to support interventions throughout Mamou Prefecture. A Canadian NGO has been supporting activities in Banga watershed, which are scheduled to end in June 1995. The European Community program for the Upper Niger and Upper Gambia is sponsoring activities in eight watersheds in the Fouta, of which two (Souloundé and Dimma) were in the original IMFDW Project. No donor has ever been found to fund activities in Ninguigui watershed, which is the most remote site, beyond Diaforé watershed.

A.2.1.2 USAID project design

In August 1988, the International Institute for Environment and Development - Washington sent a two-person team to Guinea, to assess the feasibility of USAID undertaking a project in Diaforé and Koundou watersheds. The team included a forester and a forest sociologist (one man and one woman). The team spent three weeks in Guinea, which included a six-day trip to the Fouta Djallon. They met with FDHRIDS staff, local authorities, and representatives of other projects and organizations. They visited both Diaforé and Koundou watersheds, to assess local conditions and speak with local leaders and residents. They were accompanied to the field by three male Guinean technicians. In the field, the team made efforts to speak with both women and men living in the two watersheds, to get their feedback on issues and priorities.

Subsequently, a USAID staff member based in Washington, DC came to Guinea for a few weeks to prepare the Project Identification Document. She did not conduct any additional fieldwork for the PID, but based the description of the field conditions upon the feasibility study.

In February 1990, work began on the project design. The Center for International Development and Environment at the World Resources Institute (formerly known as IIED-Washington) sent out a three-person technical assistance team to work with staff

members of USAID's Regional Economic Development Services Office (REDSO) for West Africa. The WRI team included an agroforester, an agricultural economist, and a forest sociologist (one man and two women). Three REDSO staff members (all men) were also involved in the design. The WRI team spent seven weeks in Guinea: they traveled to the Fouta, and spent time in both watersheds. On their field work, they were accompanied by three Guineans (two men and one woman) and a Peace Corps volunteer (a woman). The field work, thus, was done by a team that was half women and half men. Like the earlier trip, the team made efforts to hold meetings with women and men in the watersheds, both separately and together. While some REDSO staff, including the design team leader, went to the Fouta, they did not visit either of the two watersheds. Additional short-term assistance was provided by a male staff member from USAID's Africa Bureau in Washington, DC, who was developing an overall natural resource management (NRM) analytical framework for USAID's work in Africa.

The WRI team was responsible for providing technical assessments to be used in preparation of the project paper.⁶ They prepared descriptions of the two watersheds, and drafted annexes for the project paper concerning the economic analysis, natural resource analysis, social soundness and gender analysis, and proposed collaboration with Peace Corps. They advocated efforts to improve agricultural and livestock productivity for subsistence production, control erosion and meet needs for potable water. A strongly participatory approach to working with local residents was recommended, with a stress on low-input techniques to maximize replicability. Given the predominant role of women in agriculture and resource management activities in the watersheds, they proposed that a significant proportion of the technicians should be women. To better understand existing patterns of labor and resource management, they also recommended that Guinean sociologists be employed by the project.

After the WRI team left Guinea, the REDSO personnel were responsible for completing the project paper. Subsequently, with changes in personnel in the USAID Mission in Conakry, the project paper was put aside for some time. After a new Rural Development Officer assumed his position in May 1991, he was given responsibility for finalizing the draft Project Paper.

After the WRI team left, some basic elements of the project design paper were changed. The project goal and purpose was changed, to focus on agricultural market production in line with the USAID country strategy. In addition, the project was also redesigned to add the enterprise component and policy studies. The Government of Guinea asked USAID to consider funding additional pilot watersheds. USAID agreed to add Dissa watershed, which originally the Federal Republic of Germany had planned to finance.

⁶. Baird, Katherine, Stephen Kelleher and Paula Williams. 1990. Socio-cultural, economic and natural resources assessment of the Koundou and Diaforé watersheds, Fouta Djallon, Guinea. Prepared for USAID. Center for International Development and Environment, World Resources Institute, Washington, DC.

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The design process was primarily carried out by USAID staff and contractors, in consultation with Guinean officials. Some Guinean technicians were involved in the rapid appraisal of conditions in Diaforé and Koundou watersheds, and discussions with watershed residents about their perceived problems and development priorities. A significant proportion of those involved in the design process were women, and particular efforts were made to contact women in the initial two watersheds.

A.2.2 Logical Framework Indicators and Assumptions

The Evaluation Team assessed the appropriateness of the objectively verifiable indicators (OVIs) and the validity of the assumptions in the project logical framework. All data for purpose and output indicators was to be disaggregated by gender. Many of the progress and impact indicators were poorly chosen, as they are imprecise with respect to quality, quantity, and time.

For the following discussion, refer directly to the logical framework for the referenced OVIs and assumptions.

Goal Increased Sustainable Agricultural and Value-added Production by men and women for Domestic and Export Markets.

OVI 1 seems very appropriate.

OVI 2 seems inappropriate. If the goal is increased value-added agricultural production (the wording of the goal is somewhat ambiguous on this point), then the indicator should be the increased value of secondary transformation of agricultural products. "Industrial" is not an appropriate term for the type of small enterprise development that is possible in the watersheds. NRM-based activities are not consistent with value-added agricultural production.

Assumption 1. The GOG may or may not have the interest, but it totally lack the means. None of the other pilot watersheds that have already come to the end of their donor funding have been continued by the GOG. Some staff members remain, as at Guètoya, but they lack any means from the GOG to continue any activities begun by the project. The assumption should have stated that the GOG has sustained interest and the resources needed. At this point USAID should not rely on future GOG funding for sustaining any activities begun under the GNRMP.

Assumption 2. There appear to be no significant marketing policy constraints. The GOG has displayed willingness to undertake policy reform in the areas of land code and forest policy. The assumption appears valid.

Purpose To Improve the Management of Natural Resources in 3 Target Watersheds in the Fouta Djallon High-lands for Profitable and Sustainable Agricultural Production

OVI This indicator seems inadequate. One could have greatly increased private investment without improving either NRM or agricultural production if the investment

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were in other sectors. Also, the Evaluation Team can not see how advanced very-high resolution radiometer (AVHRR) or thematic mapping (TM) imagery could be of any use as means of verification of this indicator.

Assumption As already stated, there is a major, implicit assumption that all improved NRM will lead to profitable and sustainable agricultural production. The Evaluation Team saw many types of improved NRM that will have little or no effect of agricultural production.

Output 1. Increased watershed specific knowledge and information base among at least three watershed communities for effective management of natural resources.

This output seems very modest. One should hope that at the end of the project, nearly all communities would have an increased knowledge and information base.

OVI 1a. A natural resource inventory generally requires a map of the resource with a quantification of surface area and/or estimate of the quantity of the resource. We do not believe this is necessary or appropriate for the GNRMP except where there are specific needs. For example, dry-season water and bottom land resources for market gardening need to be inventoried to determine the potential for market gardening development.

OVI 1b. Such as assessment would be a good indicator. The Evaluation Team believes it would be better stated as an assessment of the sustainability of the land use systems in the watersheds including an analysis of the reasons why the systems have become unsustainable.

OVI 1c. This indicator is not at all clear. Inventory of what NRM techniques? Where? Traditional techniques? In or out of the watershed? What qualifies as a NRM technique?

OVI 1d. This is also not clear. Such an inventory must be tied to the needs of the specific watersheds. Assessment and testing (as needed) would be a better term than inventory.

OVI 1e. The Evaluation Team is not sure how easily verifiable this indicator is.

Assumption 1. NRM does not seem to be a priority for villagers. Their main priorities seem to be potable water, roads, schools and income generating activities.

Assumption 2. Villagers have been willing to participate in various project meetings, appraisals, and surveys, although they have indicated some annoyance with being asked the same questions over again.

Output 2. Increased capacity of watershed resource users to plan and manage common watershed resources, especially water sources, forests and pastures.

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This is a highly desirable output that is essential to the sustainability of interventions beyond PACD.

OVI 2a, 2b and 2c are all highly desirable indicators. It may not that easy, however to verify objectively if the groups are representative and to what extent that have truly participated in planning and identification of solutions.

Assumption. It is difficult for an outsider to assess whether or not a management committee is truly representative of the local community, and whether it has the authority to enforce community decisions. The Evaluation Team was told that some committees represent the local elite, and thus do not have the backing of their entire respective communities. It was also alleged that some women were appointed to the committees just to meet the project's desires, rather than reflecting community preferences. This assumption of representative committees will be severely tested if and when the project advances to management of the range, forest and fallow lands that are owned by some community members, but used by others.

Output 3. Increased adoption of NRM technologies in at least three watersheds, e.g., soil conservation, water control, planting of trees and windbreaks, etc.

OVI 3a and 3b. "Adopting" needs to be defined if this is to be objectively verifiable. The Evaluation Team believes that adoption mean that farmers will continue the practice after the project ends and not that they are simply participating or testing out a technique during the life of the project. For example, none of the live fencing has yet developed to a point where the trees planted can serve as dead fencing supports, nor have they developed to the point where techniques for pruning of branches for dead fencing materials can be developed or demonstrated. Can farmers be considered to have adopted the technique? They are reported as adopters in the Project Implementation Reports (PIRs). Adoption is very difficult to verify objectively.

Assumption 1. Virtually all agroforestry techniques require testing and screening of potential agroforestry species for their adoption to the local ecological conditions and the farming systems. Agroforestry techniques are not available "off-the-shelf" Other technologies requires lower levels of adoption to local conditions. Soil-fertility maintenance is a key constraint to sustainable land use for which sustainability requires a relatively complex set of techniques.

Assumption 2. If economic and social feasibility implies that the techniques will be sustained beyond PACD, then the Evaluation Team feels that it is too early to judge if this assumption is valid.

Output 4a. Increased number of community enterprises based on economic interests and active participation in the marketing of surplus production.

Output 4b. Increased marketing of agricultural outputs in domestic markets.

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These outputs should have been more specific on agricultural production, secondary transformation and profitability to be in line with goal and purpose. The output also seems to imply that enterprises should all be group community enterprises. The Evaluation Team believes that group enterprises should only be promoted when there is a clear need or advantage over individually-run enterprises.

OVI 3a. The number of enterprises is a weak indicator. Their profitability and viability are much more important, although more difficult to assess.

OVI 3b and c. These indicators are highly appropriate. There should be another indicator for value added.

Assumption 1. As previously discussed, only certain NRM technologies are directly related to increased agricultural production or to enterprise development. The assumption is ambiguously stated.

Assumption 2. This meaning of this assumption is not clear.

Assumption 3. Assumptions 2 and 3 strongly imply that only group enterprises will be encouraged. This seems inappropriate given that nearly all agriculture is done at the family level. Dry-season gardening is the principal exception, but even here each individual works, harvest and markets the production from their own individual plot. The principal group effort is often the construction and maintenance of a fence around the garden. This has often been problematic to date, which calls this assumption into question. Communities have shown willingness to join forces for waterpoint development, school construction and the like, but these activities are only partially linked to enterprise and agricultural development.

Output 5a. Approximately 30 GOG personnel and watershed community leaders trained in NRM.

Output 5b. Improved NRM skills among GOG staff and watershed community leaders.

These outputs are very ambiguous. They do not distinguish between a two- day training course and long-term masters level training in the United States.

OVI 5a. This indicator is not very precise, as it merely indicates that 30 people, either employed by the government or community leaders, should receive some NRM training of unspecified duration during the course of the project.

OVI 5b. The number of resource users trained annually.

This is a very ambiguous indicator. Does attending a one-hour session on composting given by an extension agent qualify as training?

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None of the indicators measures the "improved NRM skills." Improved skills implies that the participants in training programs have had effective training, and furthermore, have the opportunity to use and practice what they have learned. Thus, effectiveness and usefulness of the training needs to be assessed. The USAID Human Resources Development Assistance (HRDA) Project will soon sponsor an evaluation of USAID-sponsored in-country training for several projects, including the GNRMP.

Assumption 1. The GOG has willingly released personnel for training. The assumption is valid.

Assumption 2. The project has planned training such that resource users are willing to participate. It is important to assess, however, whether women are constrained from participating due to the nature of the training. The assumption appears valid.

Output 6. Design and adoption of policies among GOG policy makers and planners on major issues and constraints affecting sustainable use of natural resources leading to an improved policy formulation process.

OVI 6a, 6b, 6c and 6d. These indicators appear appropriate.

Assumption 1. The GOG appears to be willing to modify its policies and procedures, as evidenced by many major policy changes made by the GOG in recent years. The changes in the Land Code, however, have focused on urban issues. The government seems willing to consider recognition of customary tenure patterns in rural areas, in developing the *textes d'application*.

Assumption 2. The identified policy constraints concerning land tenure, environmental and forestry codes seem relevant for the project. While it is clearly practical for the project to address these issues as they apply to the watershed areas, it becomes more difficult to do so on a national level within the scope of this project.

The Project Paper did not adequately identify which gender issues, other than land tenure, constitute policy constraints. Similarly, the questions of access to outside markets and resources and sustainability of natural resource management programs were not well defined as policy issues. While these issues are important ones, it is not self-evident that the project can make meaningful contributions toward their resolution on a policy level.

Inputs. The logical framework specifies the use of the budget for inputs. While the Evaluation Team did not examine the financial aspects of the project in detail, certain items in the original budget were under-funded, such as the policy studies on land tenure and the Peace Corps costs. (The logical framework mentions that 27 person-months of Peace Corps volunteers would be provided: to date, 12 volunteers have been assigned to the project, and another 6 are coming in September. Each volunteer normally works a two-year contract.)

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Assumptions. The Project Paper assumed that GOG local currency funds would be disbursed by the GOG to DNFF. While this disbursement has happened, it has often been seriously delayed, with significant impacts on project activities.

INPUTS

STATEMENT	OBJECTIVELY VERIFIABLE INDICATORS (OVIs)	MEANS OF VERIFICATION (MOVs)	ASSUMPTIONS
<u>USAID</u>			<u>ALL INPUTS: GOG Local Currency Section 206 funds disbursed by Ministry of Plan and International Cooperation to DNFC.</u>
1. Technical Assistance	1. US\$ 4,756,000 (FX). Long-term: 17.3 person years Short-term: 40 person months	1. Institutional Contract (IC) signed, PIO/Ts, Annual Work Plans (AWPs), IC Annual Reports.	
2. Training (Note: does not include HRDA-funded training prior to implementation phase.)	2. US\$ 607,400 (FX) including: WMU Directors and Other GOG staff US\$ 373,000. WMU Resource Users: US\$ 86,400	2. AWP, IC Annual Reports.	<u>Availability of a Qualified TA Team.</u>
3. Land Tenure and Other Policy Analyses	3. US\$ 567,500 (FX).	3. Institutional and other Contracts signed, PIO/Ts, Annual Work Plans (AWPs), Annual Reports.	
4. Commodities	4. US\$ 2,702,540 (FX).	4. PIO's, IC Annual Reports.	
5. Project Management Support	5. US\$ 422,500 (FX).	5. AWP, IC Annual Reports.	
6. PMU Operating Costs	6. US\$ 974,409 (FX).	6. IC Contract signed. Computer equipment and imagery seen in use.	
7. Audits and Evaluations	7. US\$ 370,000 (FX).	7. Evaluation and financial mgt. review and audit reports.	
<u>Government of Guinea</u>			
1. Personnel costs (a)	1. US\$ 555,201 (LC equivalent) for WMUs & Other DNFC and GOG personnel support.	1. DNFC data.	
2. Training (b)	2. US\$ 80,370 (LC equivalent).	2. AWP, IC Annual Reports.	
3. Commodities (a)	3. WMU: US\$ 409,830 (LC equivalent).	3. AWP, IC Annual Reports.	
4. Construction (b)	4. US\$ 349,635 (LC equivalent).	4. USDH Project Mgr. reports, Fin. Mgt. Rev. Reports	4. PC, DNFC, USAID Agreement signed.
5. Peace Corps Support (b)	5. US\$ 12,870 (LC equivalent).	5. AWP.	
6. WMU Recurrent Costs (b)	6. US\$ 4,435,756 (LC equivalent).	6. AWP, USDH Project Mgt. reviews, Fin. Mg. Rev. Reports.	
<u>Peace Corps</u>			1. PC/DNFC Reaches Agreement. 2. PC Progress Level Sustainable.
1. PCV direct costs.	1. 27 person-months US\$ 233,000 (FX).	1. AWP.	
a. GOG National Budget.			
b. GOG PL-480 Counter-Part Funds.			

STATEMENT	OBJECTIVELY VERIFIABLE INDICATORS (OVIs)	MEANS OF VERIFICATION (MOV's)	ASSUMPTIONS
OUTPUTS			
1. Increased watershed specific knowledge and information base among at least three watershed communities for effective management of natural resources.	(a) Inventory of natural resources in the watersheds. (b) Assessments of rate of degradation of key resources (soil, water, forests). (c) Inventory of NRM techniques and strategies. (d) Inventory of improved practices applicable to watersheds. (e) Knowledge of (b) and (d) among resource users.	* Annual Work Plans (AWPs) * Inventories and assessments prepared by the project; * Resource use surveys, and * Project records.	* Community interest and motivation in managing natural resources. * Community willingness to participate in assessments and surveys.
2. Increased capacity of watershed resource users to plan and manage common watershed resources, especially water sources, forest and pastures.	(a) Community representative group (CRG) established. (b) CRG participation in NRM planning. (c) CRG identifies priority problems, identifies solutions and implements decisions.	* List of CRG members; * Project records documenting NRM planning, prioritization and implementation process.	Community willing to select a representative group to participate in decision making and enforce community decisions.
3. Increased adoption of NRM technologies in at least three watersheds, e.g., soil conservation, water control, planting of trees and windbreaks, etc.	(a) Increased number of farmers adopting improved NRM practices. (b) Increased number of community level NRM practices adopted (water, soil, forestry related).	Project records, reports and adoption surveys conducted by the project annual workplans.	* Availability of technologies to address priority constraints. * Economic and social feasibility of technologies demonstrated.
4. (a) Increased number of community enterprises based on economic interests and active participation in the marketing of surplus production. (b) Increased marketing of agricultural outputs in domestic and regional markets.	(a) Increased number of enterprises formed and functioning around economic interests. (b) Increased tonnage or value of products marketed. (c) Additional cash income generated.	* Project records, reports (workshops, site visits); * Annual surveys of quantities marketed and income generated by resource users. * Ex-post facto surveys of impact on marketing and income.	* Resource users adopt NRM technologies. * Practices with community-wide benefits adopted/enforced. * Resource users willing to join forces for common good.
5. (a) Approximately 30 GOG personnel and watershed community leaders trained in NRM. (b) Improved NRM skills among GOG staff and watershed community leaders.	(a) Number of GOG personnel training annually. (b) Number of resource users training annually.	* Project records, reports (workshops, site visits), and * PIO/Ps.	* GOG releases personnel for training. * Resource users willing to invest time for training.
6. Design and adoption of policies among GOG policy makers and planners on major issues and constraints affecting sustainable use of natural resources leading to an improved policy formulation process.	(a) Number of policy constraints identified. (b) Number of studies/analyses on identified constraints completed. (c) Findings of policy constraints communicated to policy makers. (d) Specific changes in policies/ regulations announced/implemented.	* Project records, reports; * Evidence/records of seminars/ meetings had with policy makers, and * Orders/statutes issued by GOG on changes in policies and regulations.	* Willingness of GOG to modify policies and procedures. * Policy constraints identified and analyzed are relevant and practical.

Table 5. Logical Framework
Guinea Natural Resources Management Project

STATEMENT	OBJECTIVELY VERIFIABLE INDICATORS (OVIs)	MEANS OF VERIFICATION (MOV _s)	ASSUMPTIONS
<p>Goal: Increased Sustainable Agricultural and Value-Added Production by men and women* for Domestic and Export Markets.</p>	<p>1. Increased output from gross primary agricultural activities in the FDH. 2. Increased output from NRM based rural industrial activities in the FDH.</p>	<p>1. Baseline data records, reports, and EOP evaluation. 2. Baseline data for the 12 BRPs vs. EOP Phase-2 Data.</p>	<p>1. GOG has sustained interest in long-term management of natural resources 2. GOG provides policy and regulatory incentives to resource users including relief of marketing constraints.</p>
<p><u>END OF PROJECT STATUS</u></p> <p>Purpose: To Improve the Management of Natural Resources in 3 Target Watersheds in the Fouta Djallon High-lands for Profitable & Sustainable Agricultural Production</p>	<p>* Increased private investment in target watersheds.</p>	<p>* Baseline Survey * Annual Work Plans (AWPs) * Midterm Evaluation * EOP Evaluation * Preproject and EOP AVHRR - ? * TM Imagery Analysis * Impact Monitoring</p>	

* All data will be disaggregated by gender at the purpose and output levels.

Appendix 3. Detailed Recommendations Concerning Agricultural Production and Enterprise Development

Market Gardening

1. More needs to be done to encourage market gardening in both the Koundou and Dissa watersheds. Skills of watershed staff need to be up-graded so that full technological packages including chemical fertilizer and, where necessary, other farm chemicals, can be offered to farmers. Farmers growing market crops commercially with support from the AMIP already are using small but appropriate amounts of chemical fertilizer. Project staff need to be trained in proper use of fertilizer and other farm chemicals in order to be in a position to provide correct advice to the watershed farmers.

2. Future contracts guaranteeing land tenure to dry-season market gardeners might include clearer delineation of the area covered by the contract.

3. More attention needs to be given to securing the perimeter with good quality fencing before time and effort is invested in market garden production. Although contracts may specify that men should help in fencing, good fencing in livestock raising areas are a *sine qua non* for profitable market garden production and is a long-term investment which the groups should pay for, if necessary taking out a loan to do so.

4. The project should encourage local business people in Kollet and possibly in business inside the watershed itself to stock vegetable seeds and chemical fertilizer; for the remaining two years of the project, the project should operate a buy-back arrangement with storekeepers who agree to stock relatively small supplies of fertilizer to take over some of the risk of the initial trial purchases.

5. The project should provide adequate training for farmers and suppliers in the use of fertilizer and any other farm chemicals recommended by the project.

6. The project should request the assistance of the villages served by the Linsan-Saran spur and the intra-watershed roads in all three watersheds to specific villages in maintaining the roads for the life of the project and to set up a system for more permanent road maintenance after the project has finished. Unless specifically prohibited by statutory authority, consideration should be given to charging a toll on the Linsan-Saran road to cover costs of necessary maintenance.

7. The project has been most fortunate in support other donors have provided in improving roads to the project areas (recently retarred road through Souguéta to Labé, Labé-Senegal road rebuilding, and IFAD-financed Labé-Tougué road). Funds should be found to finish the job of rebuilding the remaining major stretch of main access road needed in the project areas (Tougué-Kouratongo) needed both for market integration and project-management.

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Animal Traction

1. Introduction of animal traction should be considered in the other watersheds where vegetable production already makes fast land preparation necessary and cost-effective.
2. Since the activity is experimental, for initial adopters, the project should absorb part of the cost and risk of this introduction. In new areas this could be by absorbing the difference between the cost of the animals trained (GF 500,000) and untrained (GF 250,000). Farmers should pay for the yoke and plow. The project should pay half the cost of the ox-cart.
3. For farmers who have already been paying for oxen, yokes and plows with no financial help from the project, an ox-cart should be provided. This amount is approximately equivalent to the assistance first-adopters would be given for the entire package when interest payments are considered.
4. The number of adapters in Dissa (4 farmers plus the bank agent for Crédit Mutuel) is sufficient to permanently provide this valuable skill to the watershed. Similar numbers should be introduced to the other watersheds, if they are not there.
5. Appropriate adjustments to the loan term and repayment schedule (described above).

Tree Nurseries

1. If tree nurseries are in fact independent businesses, which is generally the case despite technical assistance received from the project and some initial subsidization, then all inputs provided by the project should be charged for. As a corollary to the above, anything brought by project personnel should come with a price-tag already on it and operators should know ahead of time, what they are going to pay for these inputs when it comes time to deduct their cost from payment for forest species seedlings purchased by the project.
2. Where there are school teachers interested in doing it, setting up a small nursery in conjunction with the school would make sense. For the purpose of watering the school nursery (and for reasons of hygiene), the project should finance a well for any school built and for any existing school where a school nursery is planned.
3. The project should actively encourage watershed residents to plant fruit trees that are commercially viable, favoring grafted varieties. Improvements in road transport made already by other donors and the project itself as well as the additional improvements likely to occur in the time it takes fruit-trees to mature, make fruit production a viable activity for area residents.
4. Where vegetable gardening is on the upsurge, nurseries may want to take advantage of unused capacity in their installations to produce onion plants, onion sets, tomato plants, and the like. There usually is a ready market for these plants since many people who ultimately decide that they would like to plant vegetables make the decision too late to

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produce plants needed by the time that is best to be transplanting them and would be willing to buy them.

5. Growing vegetable plants in a nursery could be a separate income-generating activity for women who happen to live near a water source in an area where vegetable gardening is popular.

6. Nurseries can be considered relatively safe investments as long as they can count on a certain base income due to project purchases of forest species.

Beekeeping

1. Expand this program to as many villages as are interested. It should be particularly interesting to remote villages since transport costs are not a problem for a high-value, low volume product like honey and beeswax.

2. Look for other buyers and check prices in the international market.

3. Investigate the strategy of holding a small percentage of the crop so that beekeepers can take advantage of the higher pre-harvest price. Thus individual beekeepers or a group of them could store honey from this year's crop for sale next year right before harvest at the pre-harvest price peak. A marketing loan from Crédit Mutuel could be used to finance this holding, or the group could hold honey contributed by its members rather than selling immediately after harvest.

4. Could women do this type of activity which is not particularly demanding in terms of physical effort, danger, or major capital investment?

Improved Poultry and Egg Production

1. Keep careful records of costs and benefits of poultry production to see if the program is worth taking from a pilot to a full-scale intervention.

2. To keep project credibility, whatever final agreement on egg production, such as setting up the facility initially on a smaller scale (which is desirable in any case where prior experience in egg-production is lacking), should be honored as soon as the beneficiary has his part of the agreement in place. Some pilot interventions may be expensive but if there is any likelihood of their being replicable elsewhere in the Fouta Djallon, they are worth trying for the sake of gaining experience; this is particularly true where beneficiaries are making a significant contribution of their own to the intervention.

Para-Veterinarians

1. People wanting expensive vaccines, such as those for cattle, should be told to go into town and buy them, so that paravets are not left holding vaccine which they cannot use and whose cost they cannot recover.

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2. For existing loans, the project should assume responsibility for the outstanding balance to keep credibility with Crédit Mutuel and to assume responsibility for having advised paravets to purchase vaccines for which there was no immediate demand.
3. Until volumes of vaccinations build up, the project should assist paravets in buying vaccines on an as-needed basis rather than transferring the cost of maintaining an inventory of vaccines.

Agricultural and Livestock Marketing

1. Loan terms for crop marketing loans need to track the marketing season closely.
2. Additional crops, such as hot pepper(*petit piment*) where there is considerable variation between prices at harvest and later in the marketing year, should be considered for marketing loans.
3. Loans for livestock buying may be initially individual loans. Once borrowers have built up a track record with Crédit Mutuel, a line-of-credit should be considered.

Non-agricultural Small Businesses

Blacksmithing

1. Blacksmiths should be helped because they operate businesses that are important to area residents, rather than because they can produce fuel-efficient stoves.
2. The project which provides a 50% loan guarantee for initial borrowing by blacksmiths should consider providing additional guarantees for a few subsequent loans at a declining percentage (say 25%, to 10% and finally eliminated) to encourage repeat borrowing. Such a practice would strengthen the ties between entrepreneurs and Crédit Mutuel, as a means to achieve sustainability of financial services after the end of the project.
3. The project should look at the durability of watering cans made by blacksmiths compared to commercially purchased plastic ones. If cost effective, the project should encourage local purchases from local blacksmiths.

Brickmaking

1. The project should recognize brick-making as a legitimate activity and one that provides people with improved living conditions. It should provide technical support, if needed. (For example, it might introduce more fuel-efficient kiln.) It would probably not be cost-effective in the watersheds to replace fire-bricks with Cinvaram bricks.

Commerce

1. Commerce is a productive and profitable activity and one that is equally open to both women and men. It should receive support from the CED component of the project. It should be considered for loans from CM where appropriate.

Tailoring

1. Where a village does not have a tailor and someone expresses interest and already has another secure cash-earning occupation (vegetable growing, teaching, etc.), they could be trained in tailoring, assisted in getting a loan to buy a machine, and assisted in their businesses (tailoring and whatever other occupation they have) so that they could pay off their loan and make a success of their businesses.

Soap-making

1. A clear accounting of all costs of soap-making should be obtained and a benefit-cost study done. If the activity is not profitable in terms of its total costs (including capital costs), it should not be introduced to other groups of women.

2. If it is still marginally profitable in terms of variable costs, each group which already has equipment should be allowed to decide whether or not to continue producing. (It should be noted that some groups have only made soap a couple of times despite having all the necessary equipment. (Some groups have had difficulties in obtaining needed supplies.)

Appendix 4. Detailed Recommendations Concerning Monitoring and Evaluation

1. An M&E system should monitor progress towards project goal and purpose. It should serve as an early warning system to show whether or not the strategies developed by the project are effectively leading to the achievement of outputs and purpose, or whether the strategies need to be modified. Goal, purpose and outputs need to be unambiguously defined and agreed upon by all partners before the M&E system can be completed.

The Evaluation Team has recommended that the goal and purpose of the project be changed. USAID and its partners need first to address this recommendation. If it is decided to retain the present goal and purpose, then the existing logical framework still needs to be closely reviewed. The Evaluation Team found that the logical progression from Outputs to Purpose to be highly tenuous (See Section 2.1.2).

The Evaluation Team suggests that a professionally-facilitated team building workshop, or closely spaced, consecutive series of workshops involving USAID, the technical assistance contractor, the DNFF, the WMU staff, Peace Corps and the Land Tenure Center may be an efficient way to proceed in resolving these questions.

2. After clarifying the project goal, purpose, and roles, then it will be important to work on improving the monitoring and evaluation system. The technical assistance team should take the lead role, but also involve its partners, in reassessing the M&E system and what needs to be monitored.

The Evaluation Team believes that the monitoring and evaluation system should be developed first and foremost as an internal management tool to be used by the project to determine whether or not the project activities are resulting in the desired objectives. The M&E system should be designed for testing the strategies, assumptions and hypotheses that have been developed for achieving project goal and purpose. It must also serve for effective reporting to Congress on project impacts.

The existing monitoring and evaluation system needs to be improved, to be scientifically sound, practical, replicable, and useful -- for project management, future extension of useful interventions, and as a model for sustainable monitoring and evaluation systems. Project staff, participants, beneficiaries, and related projects and institutions must be more involved. To the maximum extent possible, project staff should be involved in monitoring and analyzing the impacts of their own activities.

Based upon the overall objectives and the strategies elaborated for achieving them, the technical assistance staff must make the key decisions on what needs to be assessed, monitored and evaluated for testing these strategies. The TA team needs to define jointly with USAID the key elements to be monitored for effective reporting to Congress on project impacts. After such decisions are made, then outside short-term technical assistance may be needed to assist with issues of sampling methodology, survey design, and cost-effective indicators for environmental and socioeconomic factors.

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3. As the project began with a more participatory approach to data collection, in the rapid rural appraisals, it would be highly desirable for this information to be incorporated into the M&E system. More participatory means of monitoring and evaluation should be adopted, so that villagers and project staff are well integrated into the overall process.

4. The Evaluation Team recommends that the baseline household survey, in its current form, should not be used. Although the project anticipated that the firm should send interviewers to the field in mid-May 1995 to collect follow-up data, such an exercise would probably be a waste of time and money. Before considering any further work by the Guinean firm, the project should require the consultant to prepare a more complete draft report in French of the methodology and results. Such a revised report should then be evaluated by a competent social scientist. The survey results could be compared with data obtained through other studies.

5. Competent applied scientists must be engaged as short-term consultants to assist in designing the M & E system. Assistance is needed both from biophysical scientists, to develop the M&E system to monitor environmental impacts, and social scientists, for the people-level impacts. Once a system is well designed, with detailed procedures for data collection and analysis specified, then a local firm could be considered to assist the project staff in implementing the design. The major responsibility, however, must remain with the project staff.

As originally suggested in the Project Paper, the Guinean university social scientists might be able to assist with baseline data collection. Another source of competent social scientists would be the Land Tenure Center. The social scientist needs to have strong skills in both conventional survey design and analysis, and in collection and analysis of more qualitative data, such as that obtained from rapid rural appraisals or land tenure case studies. Ideally, the social scientist should also be fluent in the local languages (or should work with local social scientists who have fluency in Pular, Sousou, and Sarakollé).

6. If done at all, a structured socioeconomic survey should only be used for obtaining or verifying information that cannot be obtained by other means, e.g., PRA, observation, direct measurements, etc. The questions posed must be well-conceived, based upon a thorough knowledge of the local sociocultural conditions and analysis of existing data.

If a baseline socioeconomic survey is to be used,

- the survey purpose must be clearly defined (description, explanation, exploration?);
- competent technical (social science and statistical) advice should be provided on the sample and survey design;
- the survey should be double-translated, into Pular, Soussou, and Sarakollé (then back again into French to check the adequacy of the translations) and the questionnaire should be filled out with the answers given in the respective language (not translated on the spot into French);

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- the sampling methodology must be clearly specified and justified, and sampling categories (units of analysis), e.g., household heads, adopters vs. non-adopters, well defined and justified;
- careful consideration should be given to how gender differences will be assessed; the procedures for field measurements, e.g., crop harvests, must be well specified; adequate pre-testing of the survey instrument and analysis of the pre-test results is vital;
- the analyses to be done must be specified in advance, so that the questionnaire can be appropriately designed to obtain the necessary indicators, and so that the results can be compared with those of other studies, for verification of the data.

Appendix 5. Draft Project Evaluation Summary